Ocean Ecology Data Report: British Columbia Coastal Waters, 29 June - 10 July 1983.

K. Denman, R. Forbes, D. Mackas, S. Hill, and H. Sefton

Institute of Ocean Sciences
Department of Fisheries and Oceans
Sidney, B.C. V8L 4B2

1985

Canadian Data Report of Hydrography and Ocean Sciences No. 36

Canada

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Canadian Data Report Of Hydrography and Ocean Sciences

These reports provide a medium for the documentation and dissemination of data in a form directly useable by the scientific and engineering communities.

Generally, the reports will contain raw and/or analyzed data but will not contain interpretations of the data. Such compilations will commonly have been prepared in support of work related to the programs and interests of the Ocean Science and Surveys (OSS) sector of the Department of Fisheries and Oceans.

Data Reports are produced regionally but are numbered and indexed nationally. Requests for individual reports will be fulfilled by the issuing establishment listed on the front cover and title page. Out of stock reports will be supplied for a fee by commercial agents.

Regional and headquarters establishments of Ocean Science and Surveys ceased publication of their various report series as of December 1981. A complete listing of these publications and the last number issued under each title are published in the *Canadian Journal of Fisheries and Aquatic Sciences*, Volume 38: Index to Publications 1981. The current series began with Report Number 1 in January 1982.

Rapport statistique canadien sur l'hydrographie et les sciences océaniques

Ces rapports servent de véhicule pour la compilation et la diffusion des données sous une forme directement utilisable par les scientifiques et les techniciens.

En général, les rapports contiennent des données brutes ou analysées mais ne fournissent pas d'interprétations des données. Ces compilations sont préparées le plus souvent à l'appui de travaux reliés aux programmes et intérêts du service des Sciences et Levés océaniques (SLO) du ministère des Pêches et des Océans.

Les rapports statistiques sont produits à l'échelon régional mais sont numérotés et placés dans l'index à l'échelon national. Les demandes de rapports seront satisfaites par l'établissement auteur dont le nom figure sur la couverture et la page de titre. Les rapports épuisés seront fournis contre rétribution par des agents commerciaux.

Les établissements des Sciences et Levés océaniques dans les régions et à l'administration centrale ont cessé de publier leurs diverses séries de rapports depuis décembre 1981. Vous trouverez dans l'index des publications du volume 38 du *Journal canadien des sciences halieutiques et aquatiques*, la liste de ces publications ainsi que le dernier numéro paru dans chaque catégorie. La nouvelle série a commencé avec la publication du Rapport n° 1 en janvier 1982.

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Hydrography and Ocean Sciences No. 36

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ABSTRACT

Denman, K., R. Forbes, D. Mackas, S. Hill, and H. Sefton, 1985. Ocean Ecology Data Report: British Columbia Coastal Waters, 29 June - 10 July 1983. Can. Data Rep. Hydrogr. Ocean Sci. 36: 77 pp.

The results of a 1983 sampling program in the coastal waters of British Columbia are presented, including physical, chemical and biological data from analysis of bottle samples collected with an integrated vertical profiler, and zooplankton counts from vertical net hauls.

KEYWORDS: data, oceanographic, Pacific

RESUME

Denman, K., R. Forbes, D. Mackas, S. Hill, and H. Sefton, 1985. Ocean Ecology Data Report: British Columbia Coastal Waters, 29 June - 10 July 1983. Can. Data Rep. Hydrogr. Ocean Sci. 36: 77 pp.

Les résults d'une étude des eaux côtières de la Colombie-Britannique sont présentés. On inclus les données physiques, chimiques et biologiques de l'analyse des échantillons d'eau recueillis durant les profiles verticeaux, et les comptes de zooplankton recueillis avec les coups de filet verticeaux.

MOTS-CLES: données, océanographique, Pacifique

Acknowledgements

The authors wish to acknowledge R. Waters (through EVS Consultants Ltd.) for phytoplankton counts, and Seakem Oceanography Ltd. for the nutrient analyses. We also wish to thank the officers and crew of CFAV Endeavour for their cooperation.

Introduction

During the period 29 June - 10 July 1983, the Ocean Ecology group at the Institute of Ocean Sciences (IOS) carried out a research cruise onboard the CFAV Endeavour. The purpose of the cruise was twofold. First, we wished to revisit and sample areas to the west of Vancouver Island studied during 1978-81 to determine biological and physical effects of the 1982-83 El Nino event. Second, we wanted to carry out an initial survey of the biological and physical oceanography of Queen Charlotte Sound and Hecate Strait, in particular to look for signs of summer plankton productivity and nutrient availability on the shallow banks to the east of the Queen Charlotte Islands. On this cruise, physical, chemical and biological data were collected with an integrated oceanographic vertical profiler (OVP) consisting of several electronic sensors, a data acquisition system (DAS), and a remotely triggerable array of Niskin bottles (rosette sampler). In this report we present an inventory of all stations along with what data types were collected at each station, plus the results of the analysis of bottle samples, together with selected data from the electronic sensors. Species counts from phytoplankton samples collected by bottle and zooplankton samples collected by vertical net hauls are also included.

Sampling and analytical methods

1. Electronic sensors

Sensors used in 1983 included a Guildline Model 8701 digital CTD, a Variosens III in situ fluorometer set up to measure chlorophyll fluorescence, a Sea Tech 25-cm path length transmissometer measuring beam attenuance, and a Licor 193SB spherical quantum irradiance sensor measuring photosynthetically active quantum scalar irradiance (PAR). Outputs from these sensors were multiplexed, digitized, and communicated in serial mode to the surface via 7-conductor armored cable through an oceanographic winch. The DAS was designed and constructed at IOS. At the surface, data from the DAS were sent to a Hewlett-Packard 9845B computer, which stored the data on 8-inch flexible disks and performed some real-time data analysis and graphics display. At the same time that subsurface data were being recorded, the surface PAR was being measured with a Biospherical Instruments QSR 240 Quantum Scalar reference system, and logged by the HP9845. A typical cast of the OVP consisted of two phases. First, the package was lowered at a speed of 0.5 to 1.0 m/s, and during this time the electronic sensors were being sampled and logged at a frequency of 8 Hz. Then, after the depths at which the bottles were to be tripped were decided upon, the OVP was raised at a speed of approximately 0.5 m/s and bottles were tripped while in transit.

2. Bottle data

a) Temperature: duplicate temperatures from protected reversing thermometers were taken periodically as a check on the CTD temperatures. An offset correction was later applied to the CTD temperatures.

b) Salinity: salinity samples were collected periodically as a check on the CTD conductivity measurement. These samples were analysed later in the laboratory on an Autosal Model 8400 induction salinometer. An offset correc-

tion was later applied to the CTD salinities. All salinities are reported as dimensionless quantities.

c) Chlorophyll: the chlorophyll content of phytoplankton samples was determined at sea using the fluorometric technique outlined in Strickland and Parsons (1972). These values were used to adjust (by linear transformation) the Variosens chlorophyll value (derived from a laboratory calibration with live phytoplankton cultures) for varying field conditions.

d) Dissolved oxygen: the dissolved oxygen content of bottle samples was determined at sea by the Winkler technique outlined in Strickland and Parsons (1972). Samples were "fixed" with manganous sulphate and alkaline iodide solution within 15 minutes of being drawn, and titrations were carried out within 24 hours of sampling.

e) Inorganic nutrients: reactive nitrate-nitrite, phosphate and silicate concentrations were measured in the laboratory by colorimetry on a Technicon II Auto-Analyzer. Water samples were quick-frozen immediately after collection and were kept frozen until analysis.

f) Primary productivity: P_{max}, photosynthetic capacity, was estimated from productivity versus light experiments. Water was drawn directly from rosette bottles into dark containers. Subsamples of 60-mL (17 to 21 light bottles, 2 dark bottles) were taken in the ship's laboratory. These were inoculated with 1-mL 0.185 MBq mL^{-1} $NaH^{14}CO_3$ and incubated in a linear incubator under a range of light intensities for 1 h. The subsamples were filtered onto 0.45 μm Millipore filters, fumed over concentrated acid for 1 minute, and placed in 15-mL Aquasol (New England Nuclear). Sample activities were determined later using an LKB 1217 scintillation counter, with counting efficiencies determined by the sample channels ratio method. P_{max} was derived from photosynthetic parameters estimated by the method of Platt et al. (1980) and normalized to chlorophyll biomass. Detailed results of productivity measurements are available in Forbes et al. (1983).

g) Phytoplankton counts: samples were drawn from rosette bottles, preserved in Lugol's solution, and stored for later analysis. Subsamples (ranging from 2.2 mL to 100 mL) were settled out and counted under an inverted microscope.

h) Zooplankton counts: zooplankton samples were collected in vertical net hauls, in a net with 0.5 m^2 opening, #6 mesh (233 micron), and a mechanical flowmeter. Samples were preserved in 5% to 10% formalin in seawater for later analysis.

Estimated accuracy and precision of data

1. CTD and other electronic sensor values - the fundamental limit to resolution is given by the 12 bit accuracy (equivalent to 0.025% of full scale) of the analog to digital converter used. Manufacturers give the accuracy and resolution of the sensors as follows:

Variable	Accuracy (+/-)	Resolution
Pressure	1.25 dbar	0.25 dbar
Temperature	0.01 C	0.003 C
Equivalent salinity	0.01	0.005
% transmission	0.5 %	0.5 %
In situ PAR	7.00 %	0.50 %

2. Chlorophyll - Parsons et al. (1984) estimated that the precision ($\pm 2\sigma$) of the fluorometric method for replicate measurements at the 0.5 mg m^{-3} level should be better than 10%. An estimate of the precision of the method as practised here was made on a previous cruise. The mean of 15 replicate samples (3 from each of 5 rosette bottles tripped at the same depth) was 3.01 $\pm$ 0.30 mg-Chl a m^{-3} ($\pm$ 9.8%). The coefficient of variation was 4.9%. Analysis of variance indicated no significant difference between samples drawn from one or more bottles tripped at the same depth (F_t = 0.307, F_r = 0.712).

3. Dissolved oxygen - Strickland and Parsons (1972) estimated that the Winkler technique should give a value within 0.034 mL/L of the true value.

4. Inorganic nutrients - replicate analyses were done for some samples from cruises 79-04, 79-05, 80-05, and 84-02. The expected percentage error was estimated through a statistical treatment of these data (see Appendix 1), and the values found are summarized below:

Cruise	Nitrate error	Phosphate error	Silicate error	N
79-04	10.1	5.6	8.7	61
79-05	15.4	15.2	15.7	120
80-05	18.2	2.4	6.7	56
84-02	1.8	1.5	2.5	8
COMBINED	14.3	9.4	11.5	245

5. Primary productivity - Parsons et al. (1984) state that the correct value at the 30 mg-C m^{-3} h^{-1} level lies in the range, mean of n determinations $\pm 3/(n^{1/2})$ mg-C m^{-3} h^{-1}. We determined the mean coefficient of variation for 23 pairs of replicate light bottles, incubated under identical light intensities, to be 4.1%, with a range from 0.02% to 26.0%.

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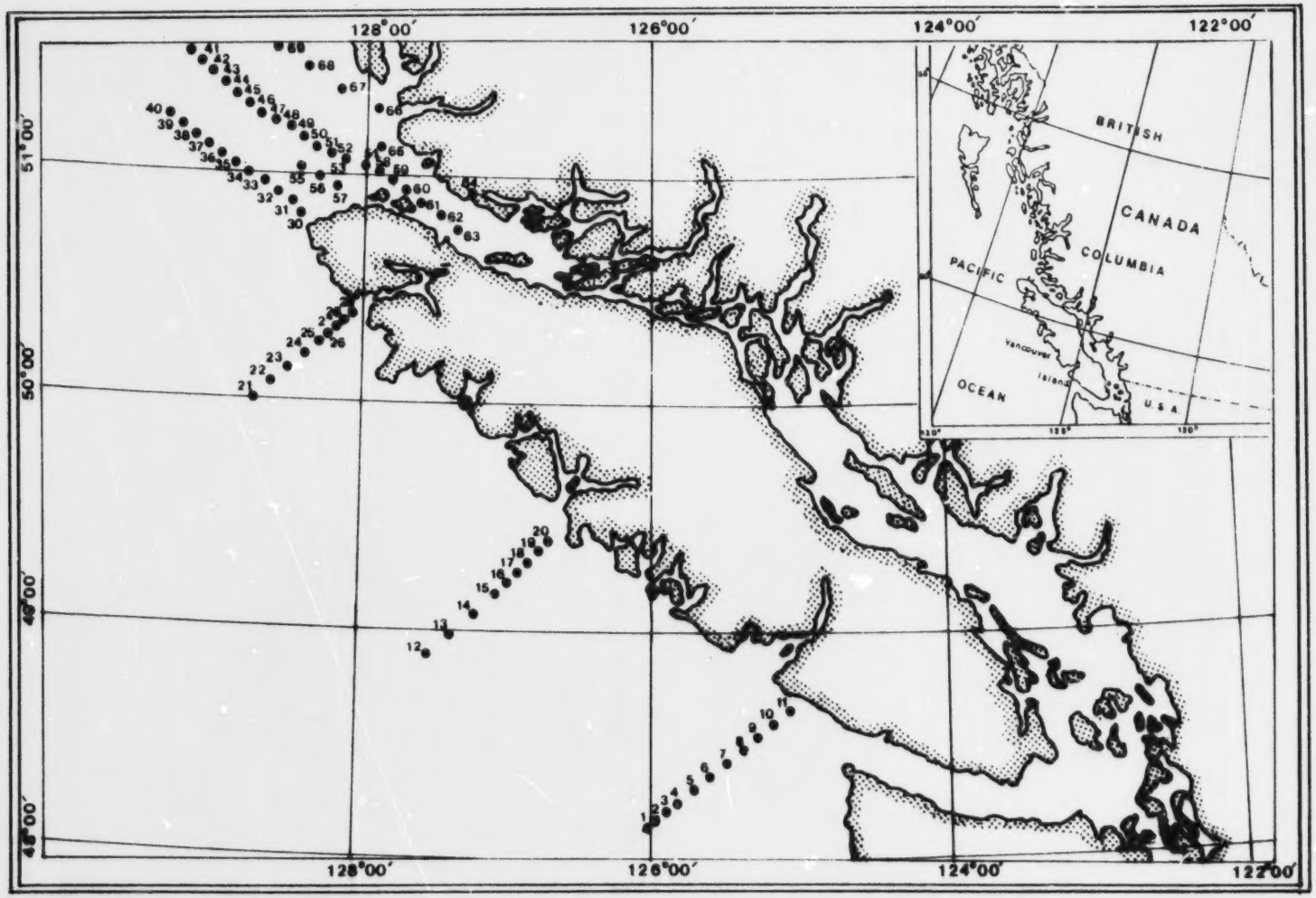
Parsons, T.R., Y Maita and C.M. Lalli. 1984. A Manual of Chemical and Biological Methods for Seawater Analysis. Pergamon Press, Oxford. 173 p.

Platt, T., C.L. Gallegos and W.G. Harrison. 1980. Photoinhibition of photosynthesis in natural assemblages of marine phytoplankton. J. Mar. Res. 38: 687-701.

Strickland, J. D., and T. R. Parsons. 1972. A Practical Manual of Seawater Analysis. Bulletin 167 (2nd. ed.), Fisheries Research Board of Canada.

Notes

1. The zooplankton samples described in this report were all analyzed by the same worker (H. Sefton). Similarly, the phytoplankton samples were all analyzed by R. Waters.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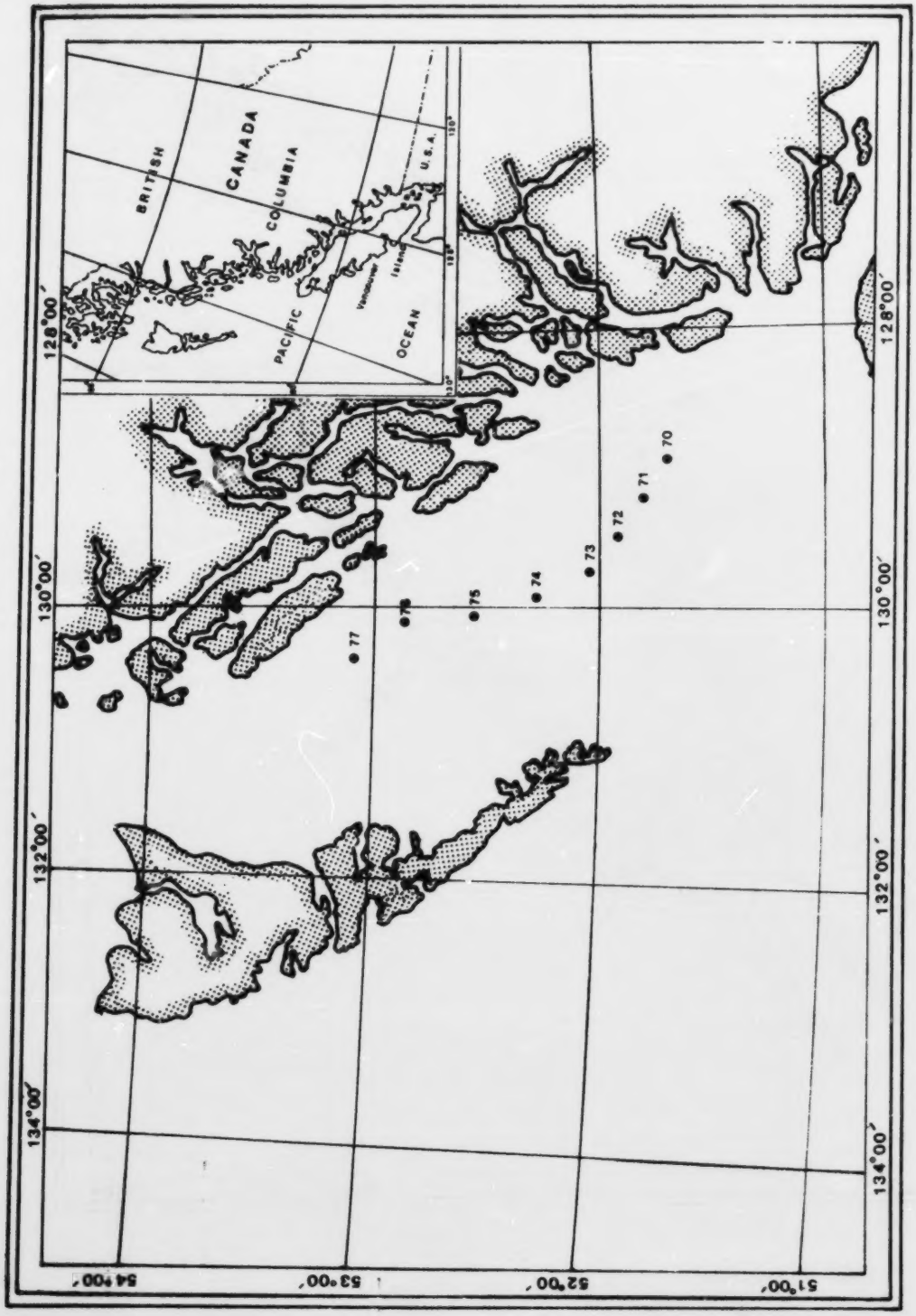
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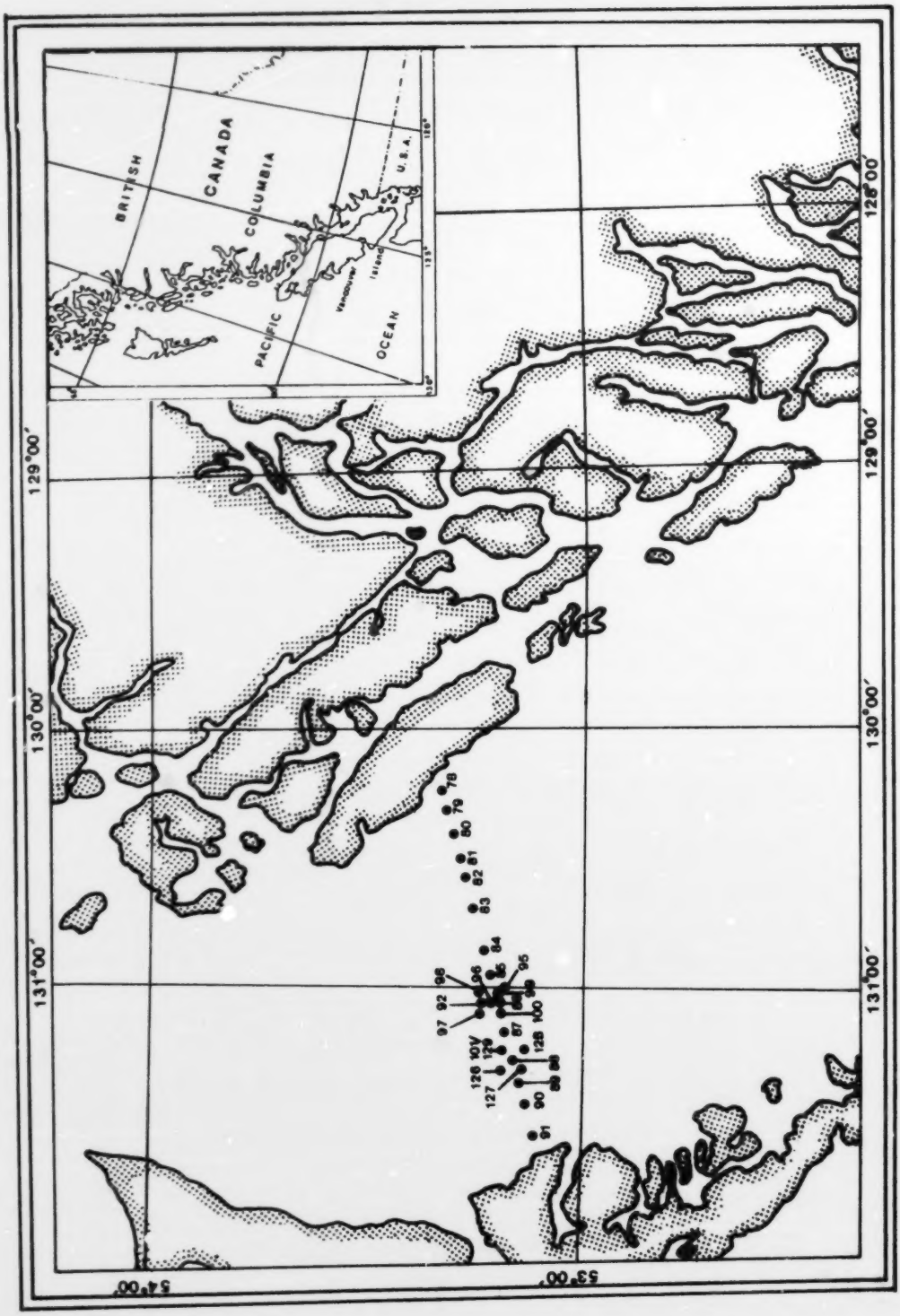
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Cruise 83-04

DATA TYPES AVAILABLE
'+' : available, '-' : not available

Stn. No.	Date Da	Mo	Time (PDT)	Latitude	Longitude	CTD	Vario. CHL a	Beam Atten-uance	In Situ Light	O2	Nutri-ents	CHL a	C14	Phyto-plank-ton	Zoo-plank-ton
1	29	06	0530	48°08.5'	126°00.0'	+	+	+	+	+	+	-	-	-	-
2	29	06	0623	48°10.6'	125°56.2'	+	+	+	+	-	-	-	-	+	-
3	29	06	0810	48°12.9'	125°52.0'	+	+	+	+	+	+	+	-	+	+
4	29	06	1054	48°15.1'	125°47.7'	+	+	+	+	+	+	+	-	+	-
5	29	06	1208	48°18.6'	125°41.2'	+	+	+	+	+	+	+	-	+	-
6	29	06	1307	48°22.0'	125°34.7'	+	+	+	+	+	+	+	-	+	-
7	29	06	1404	48°25.5'	125°28.3'	+	+	+	+	+	+	+	-	+	+
8	29	06	1530	48°28.9'	125°21.8'	+	+	+	+	+	+	+	-	+	-
9	29	06	1640	48°32.2'	125°15.5'	+	+	+	+	+	+	+	-	+	-
10	29	06	1733	48°35.6'	125°09.0'	+	+	+	+	+	+	+	-	+	+
11	29	06	1840	48°39.0'	125°02.5'	+	+	+	+	-	+	+	-	+	-
12	01	07	0515	48°53.5'	127°29.0'	+	+	+	-	+	+	+	-	+	-
13	01	07	0625	48°59.0'	127°19.5'	+	+	+	+	+	+	+	-	-	-
14	01	07	0720	49°04.5'	127°11.0'	+	+	+	+	+	+	+	-	+	-
15	01	07	0830	49°10.0'	127°02.0'	+	+	+	+	+	+	+	-	+	+
P15	01	07	0950	49°10.0'	127°02.0'	+	+	+	+	-	-	-	-	+	-
16	01	07	1031	49°12.8'	126°57.5'	+	+	+	+	-	-	-	-	+	-
17	01	07	1127	49°15.5'	126°53.0'	+	+	+	+	+	+	+	-	+	+
18	01	07	1242	49°18.3'	126°48.8'	+	+	+	+	-	-	-	-	+	-
19	01	07	1325	49°21.5'	126°44.5'	+	+	+	+	+	+	+	-	+	+
20	01	07	1425	49°24.0'	126°40.0'	+	+	+	+	-	+	+	+	+	-
21	01	07	2225	50°00.9'	128°43.6'	+	+	+	-	+	+	+	-	-	+
22	02	07	0020	50°04.8'	128°36.6'	+	+	+	-	+	+	+	-	+	-
23	02	07	0115	50°08.6'	128°29.7'	+	+	+	-	+	+	+	-	+	-
24	02	07	0210	50°12.3'	128°23.0'	+	+	+	-	+	+	+	-	+	+
25	02	07	0410	50°16.0'	128°16.4'	+	+	+	-	+	+	+	-	+	-
26	02	07	0430	50°17.8'	128°13.1'	+	+	+	-	-	-	-	-	+	-
27	02	07	0515	50°19.6'	128°09.8'	+	+	+	-	+	+	+	-	+	+
28	02	07	0614	50°21.4'	128°06.7'	+	+	+	+	-	-	-	-	+	-
29	02	07	0700	50°23.1'	128°03.5'	+	+	+	+	+	+	+	-	+	-
30	02	07	1105	50°49.8'	128°28.2'	+	+	+	+	+	+	+	-	+	-
31	02	07	1228	50°52.2'	128°29.4'	+	+	+	+	-	-	-	-	+	+
32	02	07	1330	50°54.6'	128°35.5'	+	+	+	+	+	+	+	-	-	-

Cruise 83-04

DATA TYPES AVAILABLE
'+' : available, '-' : not available

Stn. No.	Date Da	Mo	Time (PDT)	Latitude	Longitude	CTD	Vario. CHL a	Beam Atten-uance	In Situ Light	O2	Nutri-ents	CHL a	C14	Phyto-plank-ton	Zoo-plank-ton
33	02	07	1432	50°57.0'	128°41.6'	+	+	+	+	-	-	-	-	-	-
34	02	07	1559	50°59.5'	128°47.6'	+	+	+	+	+	+	+	+	+	+
35	02	07	1646	51°02.1'	128°53.5'	+	+	+	+	-	-	-	-	-	-
36	02	07	1800	51°04.7'	128°59.4'	+	+	+	+	+	+	+	-	-	-
37	02	07	1851	51°07.3'	129°05.2'	+	+	+	+	-	-	-	-	-	+
38	02	07	1956	51°10.0'	129°11.0'	+	+	+	+	+	+	+	-	+	-
39	02	07	2045	51°12.8'	129°16.6'	+	+	+	+	-	-	-	-	-	-
40	02	07	2130	51°15.6'	129°22.3'	+	+	+	+	-	-	-	-	+	+
40A	02	07	2332	51°15.6'	129°22.3'	+	+	+	-	+	+	+	-	-	-
41	03	07	0145	51°33.4'	129°14.6'	+	+	+	-	+	+	+	-	-	-
42	03	07	0222	51°30.4'	129°09.6'	+	+	+	-	-	-	-	-	-	+
43	03	07	0325	51°27.4'	129°04.4'	+	+	+	-	+	+	+	-	+	-
44	03	07	0400	51°24.5'	128°59.2'	+	+	+	-	-	-	-	-	-	-
45	03	07	0500	51°21.6'	128°54.0'	+	+	+	-	+	+	+	-	-	-
46	03	07	0555	51°18.8'	128°48.6'	+	+	+	+	-	-	-	-	-	+
47	03	07	0725	51°16.0'	128°43.2'	+	+	+	+	+	+	+	-	+	-
48	03	07	0755	51°14.3'	128°36.9'	+	+	+	+	-	-	-	-	-	-
49	03	07	0845	51°12.6'	128°30.5'	+	+	+	+	+	+	+	-	-	-
50	03	07	0936	51°09.9'	128°24.9'	+	+	+	+	-	+	+	+	+	+
51	03	07	1055	51°07.3'	128°19.3'	+	+	+	+	+	+	+	-	-	-
52	03	07	1153	51°05.7'	128°12.9'	+	+	+	+	-	-	-	-	-	-
53	03	07	1243	51°04.1'	128°06.4'	+	+	+	+	+	+	+	-	+	-
54	03	07	1327	51°02.6'	127°59.9'	+	+	+	+	-	-	-	-	-	+
55	03	07	1554	51°01.6'	128°26.0'	+	+	+	+	+	+	+	+	+	-
56	03	07	1720	50°58.9'	128°18.2'	+	+	+	+	-	-	-	-	-	+
57	03	07	1820	50°56.4'	128°10.4'	+	+	+	+	+	+	+	-	-	-
58	04	07	0415	51°01.1'	127°53.4'	+	+	+	-	+	+	+	-	+	-
59	04	07	0456	50°59.6'	127°46.9'	+	+	+	-	-	-	-	-	-	-
60	04	07	0620	50°56.0'	127°41.0'	+	+	+	+	+	+	+	-	+	+
61	04	07	0729	50°52.5'	127°35.0'	+	+	+	+	-	-	-	-	-	-
62	04	07	0821	50°49.5'	127°27.0'	+	+	+	+	+	+	+	-	+	-
P62	04	07	0850	50°49.5'	127°27.0'	+	+	+	+	-	-	+	+	-	-
63	04	07	0928	50°46.0'	127°20.0'	+	+	+	+	-	-	-	-	-	+

Cruise 83-04

DATA TYPES AVAILABLE
'+' : available, '-' : not available

Stn. No.	Date Da	Mo	Time (PDT)	Latitude	Longitude	CTD	Vario. CHL a	Beam Atten-uance	In Situ Light	O2	Nutri-ents	CHL a	C14	Phyto-plank-ton	Zoo-plank-ton
64	04	07	1105	50°44.0'	127°12.0'	+	+	+	+	+	+	+	-	+	-
65	04	07	2030	51°08.0'	127°53.0'	+	+	+	+	+	+	+	-	-	-
66	04	07	2140	51°18.0'	127°55.0'	+	+	+	+	+	+	+	-	+	-
67	04	07	2303	51°23.0'	128°00.0'	+	+	+	-	+	+	+	-	-	-
68	05	07	0038	51°28.9'	128°24.0'	+	+	+	-	+	+	+	-	+	+
69	05	07	0225	51°35.3'	128°37.3'	+	+	+	-	+	+	+	-	-	-
70	05	07	0335	51°42.4'	128°53.5'	+	+	+	-	+	+	+	-	+	+
71	05	07	0512	51°48.8'	129°10.6'	+	+	+	-	+	+	+	-	-	-
72	05	07	0645	51°55.4'	129°27.5'	+	+	+	+	+	+	+	-	-	+
73	05	07	0835	52°03.4'	129°42.8'	+	+	+	+	+	+	+	+	+	-
74	05	07	1020	52°17.8'	129°54.0'	+	+	+	+	+	+	+	-	-	-
75	05	07	1223	52°34.2'	130°01.9'	+	+	+	+	+	+	+	-	+	-
76	05	07	1418	52°52.5'	130°05.8'	+	+	+	+	+	+	+	-	-	-
77	05	07	1617	53°05.5'	130°21.1'	+	+	+	+	+	+	+	-	+	+
78	05	07	1916	53°19.8'	130°13.7'	+	+	+	+	-	-	-	-	-	+
79	05	07	2008	53°19.2'	130°18.1'	+	+	+	+	+	+	+	+	+	-
80	05	07	2046	53°18.2'	130°23.7'	+	+	+	+	-	-	-	-	-	-
81	05	07	2128	53°17.3'	130°29.5'	+	+	+	+	-	-	-	-	-	-
82	05	07	2248	53°16.7'	130°34.0'	+	+	+	-	+	+	+	-	+	-
83	05	07	2338	53°15.5'	130°41.0'	+	+	+	-	+	+	+	-	-	-
84	06	07	0115	53°13.8'	130°51.0'	+	+	+	-	+	+	+	-	-	+
85	06	07	0140	53°13.0'	130°56.5'	+	+	+	-	-	-	-	-	-	-
86	06	07	0320	53°12.0'	131°02.7'	+	+	+	-	+	+	+	-	+	-
87	06	07	0234	53°11.0'	131°09.5'	+	+	+	-	-	-	-	-	-	-
88	06	07	0406	53°10.0'	131°16.0'	+	+	+	-	-	-	-	-	-	-
89	06	07	0442	53°09.2'	131°21.5'	+	+	+	-	-	-	-	-	-	-
90	06	07	0514	53°08.2'	131°26.5'	+	+	+	-	-	-	-	-	-	-
91	06	07	0543	53°07.2'	131°33.6'	+	+	+	+	-	-	-	-	-	-
92	06	07	0932	53°14.2'	131°02.8'	+	+	+	+	-	+	+	+	-	-
93	06	07	1317	53°14.2'	131°02.8'	+	+	+	+	-	-	-	-	-	-
94	06	07	1537	53°11.6'	131°00.3'	+	+	+	+	-	+	+	+	+	-
95A	06	07	1747	53°11.5'	130°59.6'	+	+	+	+	-	-	-	-	-	-
95B	06	07	1800	53°11.5'	130°59.6'	+	+	+	+	-	-	-	-	-	-

Cruise 83-04

DATA TYPES AVAILABLE
'+' : available, '-' : not available

Stn. No.	Date Da	Mo	Time (PDT)	Latitude	Longitude	CTD	Vario. CHL a	Beam Atten-uance	In Situ Light	O2	Nutri-ents	CHL a	C14	Phyto-plank-ton	Zoo-plank-ton
95C	06	07	1805	53°11.5'	130°59.6'	+	+	+	+	-	-	-	-	-	-
95D	06	07	1810	53°11.5'	130°59.6'	+	+	+	+	-	-	-	-	-	-
95E	06	07	1815	53°11.5'	130°59.6'	+	+	+	+	-	-	-	-	-	-
95F	06	07	1819	53°11.5'	130°59.6'	+	+	+	+	-	-	-	-	-	-
95G	06	07	1824	53°11.5'	130°59.6'	+	+	+	+	-	-	-	-	-	-
95H	06	07	1830	53°11.5'	130°59.6'	+	+	+	+	-	-	-	-	-	-
95I	06	07	1835	53°11.5'	130°59.6'	+	+	+	+	-	-	-	-	-	-
95J	06	07	1839	53°11.5'	130°59.6'	+	+	+	+	-	-	-	-	-	-
95K	06	07	1844	53°11.5'	130°59.6'	+	+	+	+	-	-	-	-	-	-
95L	06	07	1849	53°11.5'	130°59.6'	+	+	+	+	-	-	-	-	-	-
95M	06	07	1854	53°11.5'	130°59.6'	+	+	+	+	-	-	-	-	-	-
96A	06	07	2045	53°13.2'	131°02.8'	+	+	+	+	-	+	+	+	+	-
96B	06	07	2142	53°13.2'	131°02.8'	+	+	+	+	-	-	-	-	-	-
96C	06	07	2247	53°13.2'	131°02.8'	+	+	+	-	-	-	-	-	-	-
96D	06	07	2343	53°13.2'	131°02.8'	+	+	+	-	-	-	-	-	-	-
96E	07	07	0047	53°13.2'	131°02.8'	+	+	+	-	-	-	-	-	-	-
96F	07	07	0144	53°13.2'	131°02.8'	+	+	+	-	-	-	-	-	-	-
96G	07	07	0245	53°13.2'	131°02.8'	+	+	+	-	-	-	+	+	-	-
96H	07	07	0344	53°13.2'	131°02.8'	+	+	+	-	-	-	-	-	-	-
96I	07	07	0440	53°13.2'	131°02.8'	+	+	+	-	-	-	-	-	-	-
96J	07	07	0545	53°13.2'	131°02.8'	+	+	+	+	-	-	+	+	-	-
96K	07	07	0641	53°13.2'	131°02.8'	+	+	+	+	-	-	-	-	-	-
96L	07	07	0744	53°13.2'	131°02.8'	+	+	+	+	-	-	-	-	-	-
96M	07	07	0847	53°13.2'	131°02.8'	+	+	+	+	-	-	+	+	+	-
96N	07	07	0947	53°13.2'	131°02.8'	+	+	+	+	-	+	+	-	-	-
96O	07	07	1047	53°13.2'	131°02.8'	+	+	+	+	-	-	-	-	-	-
96P	07	07	1145	53°13.2'	131°02.8'	+	+	+	+	-	-	+	+	-	-
96Q	07	07	1247	53°13.2'	131°02.8'	+	+	+	+	-	-	+	-	-	-
96R	07	07	1345	53°13.2'	131°02.8'	+	+	+	+	-	-	-	-	-	-
96S	07	07	1445	53°13.2'	131°02.8'	+	+	+	+	-	-	+	+	-	-
96T	07	07	1547	53°13.2'	131°02.8'	+	+	+	+	-	-	+	-	-	-
96U	07	07	1641	53°13.2'	131°02.8'	+	+	+	+	-	-	-	-	-	-
96V	07	07	1750	53°13.2'	131°02.8'	+	+	+	+	-	-	+	+	-	-

Cruise 83-04

DATA TYPES AVAILABLE

'+' : available, '-' : not available

Stn. No.	Date Da	Mo	Time (PDT)	Latitude	Longitude	CTD	Vario. CHL a	Beam Atten-uance	In Situ Light	O2	Nutri-ents	CHL a	C14	Phyto-plank-ton	Zoo-plank-ton
96W	07	07	1851	53°13.2'	131°02.8'	+	+	+	+	-	-	+	-	-	-
96X	07	07	1944	53°13.2'	131°02.8'	+	+	+	+	-	-	-	-	-	-
96Y	07	07	2045	53°13.2'	131°02.8'	+	+	+	+	-	+	+	+	+	-
97	07	07	2117	53°14.7'	131°05.3'	+	+	+	+	-	+	+	-	-	-
98	07	07	2147	53°14.7'	131°00.3'	+	+	+	+	-	+	+	-	-	-
99	07	07	2214	53°11.7'	131°00.3'	+	+	+	-	-	+	+	-	-	-
100	07	07	2245	53°11.7'	131°05.3'	+	+	+	-	-	+	+	-	-	-
101	07	07	2345	53°11.5'	131°13.6'	+	+	+	-	-	+	+	+	+	-
102	08	07	0038	53°11.5'	131°13.6'	+	+	+	-	-	-	-	-	-	-
103	08	07	0141	53°11.5'	131°13.6'	+	+	+	-	-	-	-	-	-	-
104	08	07	0240	53°11.5'	131°13.6'	+	+	+	-	-	-	-	-	-	-
105	08	07	0341	53°11.5'	131°13.6'	+	+	+	-	-	-	-	-	-	-
106	08	07	0445	53°11.5'	131°13.6'	+	+	+	-	-	-	-	-	-	-
107	08	07	0547	53°11.5'	131°13.6'	+	+	+	+	-	-	-	-	-	-
108	08	07	0645	53°11.5'	131°13.6'	+	+	+	+	-	-	-	-	-	-
109	08	07	0742	53°11.5'	131°13.6'	+	+	+	+	-	-	-	-	-	-
110	08	07	0846	53°11.5'	131°13.6'	+	+	+	+	-	-	-	-	-	-
111	08	07	0950	53°11.5'	131°13.6'	+	+	+	+	-	+	+	-	-	-
112	08	07	1046	53°11.5'	131°13.6'	+	+	+	+	-	-	-	-	-	-
113	08	07	1147	53°11.5'	131°13.6'	+	+	+	+	-	-	-	-	-	-
114	08	07	1246	53°11.5'	131°13.6'	+	+	+	+	-	-	-	-	-	-
115	08	07	1343	53°11.5'	131°13.6'	+	+	+	+	-	-	-	-	-	-
116	08	07	1446	53°11.5'	131°13.6'	+	+	+	+	-	-	-	-	-	-
117	08	07	1545	53°11.5'	131°13.6'	+	+	+	+	-	-	-	-	+	-
118	08	07	1647	53°11.5'	131°13.6'	+	+	+	+	-	-	-	-	-	-
119	08	07	1740	53°11.5'	131°13.6'	+	+	+	+	-	-	-	-	-	-
120	08	07	1838	53°11.5'	131°13.6'	+	+	+	+	-	-	-	-	-	-
121	08	07	1944	53°11.5'	131°13.6'	+	+	+	+	-	-	-	-	-	-
122	08	07	2046	53°11.5'	131°13.6'	+	+	+	+	-	-	-	-	-	-
123	08	07	2149	53°11.5'	131°13.6'	+	+	+	+	-	-	-	-	-	-
124	08	07	2248	53°11.5'	131°13.6'	+	+	+	-	-	-	-	-	-	-
125	08	07	2348	53°11.6'	131°13.6'	+	+	+	-	-	+	+	+	+	-
126	09	07	0028	53°11.5'	131°18.6'	+	+	+	-	-	+	+	-	-	-

Cruise 83-04

DATA TYPES AVAILABLE
'+' : available, '-' : not available

Stn. No.	Date Da	Mo	Time (PDT)	Latitude	Longitude	CTD	Vario. CHL a	Beam Atten-uance	In Situ Light	O2	Nutri-ents	CHL a	C14	Phyto-plank-ton	Zoo-plank-ton
127	09	07	0100	53°08.5'	131°18.6'	+	+	+	-	-	+	+	-	-	-
128	09	07	0128	53°08.5'	131°13.6'	+	+	+	-	-	+	+	-	-	-
129	09	07	0155	53°11.5'	131°13.6'	+	+	+	-	-	+	+	+	+	-
130	09	07	0338	53°11.5'	131°13.6'	+	+	+	-	-	-	-	-	-	-
131	09	07	0544	53°11.5'	131°13.6'	+	+	+	+	-	-	-	-	-	-
132	09	07	0740	53°11.5'	131°13.6'	+	+	+	+	-	-	-	-	-	-
133	09	07	1655	53°30.0'	130°45.0'	+	+	+	+	+	+	-	-	-	-
134	10	07	0730	54°04.0'	130°43.0'	+	+	+	+	+	+	+	-	+	-
135	10	07	0845	54°06.0'	130°32.0'	+	+	+	+	+	+	+	-	-	-
136	10	07	0934	54°12.3'	130°28.0'	+	+	+	+	+	+	+	-	+	+

Cruise 83-04

DATA TYPES AVAILABLE

'+' : available, '-' : not available

'§' : CTD data reside with IOS Ocean Physics (S. Tabata)

Stn. No.	Date Da	Date Mo	Time (PDT)	Latitude	Longitude	CTD (§)	Vario. CHL a	Beam Atten-uance	In Situ Light	O2	Nutri-ents	CHL a	C14	Phyto-plank-ton	Zoo-plank-ton
P001	29	06	2040	48°34.5'	125°30.0'	+	-	-	-	-	-	-	-	-	-
P002	29	06	2240	48°36.0'	126°00.0'	+	-	-	-	-	-	-	-	-	+
P003	30	06	0040	48°37.5'	126°20.0'	+	-	-	-	-	-	-	-	-	-
P004	30	06	0220	48°39.0'	126°40.0'	+	-	-	-	-	-	-	-	-	-
P005	30	06	0445	48°41.6'	127°10.0'	+	-	-	-	-	-	-	-	-	+
P006	30	06	0730	48°44.6'	127°40.0'	+	-	-	-	-	-	-	-	-	-
P007	30	06	1000	48°46.6'	128°10.0'	+	-	-	-	-	-	-	-	-	-
P008	30	06	1220	48°49.0'	128°40.0'	+	-	-	-	-	-	-	-	-	+
P009	30	06	1610	48°51.4'	129°10.0'	+	-	-	-	-	-	-	-	-	-
P010	30	06	1830	48°53.6'	129°40.0'	+	-	-	-	-	-	-	-	-	-
P011	30	06	2030	48°56.0'	130°10.0'	+	-	-	-	-	-	-	-	-	+

DATABASE LISTING FOR CRUISE 83-04. PAGE 1

* - Indicates that data is from an electronic sensor.
§ - Pmax for 14C production in (mg C/mg Chl a/h)

STN NO.	BOT NO.	DEPTH (dbar)	*TEMP (deg C)	*SALINITY	CHL A (mg/m3)	OXY (mL/L)	Pm (§)	NO3 (mmol / m3)	PO4	SiO4
1	01	247.7	6.77	34.00		2.38		33.02	3.24	51.90
1	02	199.8	7.17	33.92		3.04		29.42	2.83	43.00
1	03	148.4	7.92	33.76		3.50		27.10	2.83	34.80
1	04	121.1	8.53	33.49		3.98		24.09	2.45	29.00
1	05	99.4	8.84	33.02		5.08		16.01	1.69	18.00
1	06	73.4	8.99	32.50		6.02		9.64	1.60	10.30
3	01	245.0	6.80	33.97		2.55		32.20	3.03	49.50
3	02	199.8	7.25	33.90		2.95		29.28	2.24	41.90
3	03	148.8	7.88	33.80		2.99		27.90		36.10
3	04	121.4	8.34	33.62		3.27		24.29	2.68	30.30
3	05	97.6	8.81	33.27		3.97		20.42	2.50	25.20
3	06	74.0	9.18	32.85		5.32		12.67	1.64	14.50
3	07	51.0	9.35	32.47		6.44		6.38	1.47	5.10
3	08	28.1	10.03	32.42	.68	6.67		2.24	1.56	4.90
3	09	20.7	10.81	32.30	.73	7.10		.60	1.01	4.50
3	10	10.9	14.01	31.81		6.61		.09	.86	3.80
4	01	220.5	6.87	33.95						
4	02	191.4	7.03	33.90		2.42		29.30	3.44	43.50
4	03	145.7	7.64	33.80		3.00		24.90	3.38	35.50
4	04	122.2	8.00	33.66		3.31		26.20	2.92	33.80
4	05	97.4	8.03	33.28		4.27		20.90	2.92	27.30
4	06	73.3	8.49	32.72		5.39		13.30	2.41	17.10
4	07	52.3	9.03	32.46		6.34		7.40	2.17	7.10
4	08	26.9	9.48	32.26		4.24		17.40	2.72	27.30
4	09	14.8	11.72	31.82	1.52	6.82		1.50	.46	9.30
4	10	9.8	14.08	31.33	.58	6.88		.30	.57	3.10
5	01	139.0	7.45	33.85		2.65		29.85	2.00	41.40
5	02	102.0	8.06	33.57		3.28		27.26	2.80	35.20
5	03	73.6	8.30	33.12		3.59		24.25	2.44	33.90
5	04	49.1	8.68	32.70		3.86		23.48	2.29	33.60
5	05	29.0	9.39	32.25		4.35		22.10	2.17	33.40
5	06	17.5	10.16	31.89		5.36		21.59	1.87	32.80
5	07	7.7	13.06	31.36	1.01	8.43		0.00	.47	3.10
5	08	1.1	13.82	31.30						
6	01	147.9	7.20	33.86		2.23		30.92	3.23	47.50
6	02	121.3	7.25	33.81		2.21		29.03	3.06	45.70
6	03	90.7	7.63	33.49		2.61		29.38	3.08	45.20
6	04	66.5	8.12	33.15				27.23	2.80	39.70
6	05	40.5	8.84	32.73		3.97		22.99	2.44	34.10
6	06	11.6	12.53	31.69		7.12		1.73	.90	10.50
6	07	11.5	13.22	31.40	3.37	7.41		.52	.73	10.20
6	08	4.3	13.98	31.13	2.58	7.66		.26	.37	10.50
7	01	129.8	7.11	33.79		1.93		26.47	3.22	44.30
7	02	99.5	7.27	33.67		2.04		30.63	3.22	48.60
7	03	75.1	7.50	33.53		2.31		29.25	3.13	46.30
7	04	49.6	8.04	33.20		3.08		27.27	2.80	40.10
7	05	29.3	9.27	32.57		4.28		20.78	1.76	30.70

DATABASE LISTING FOR CRUISE 83-04. PAGE 2

* - Indicates that data is from an electronic sensor.

§ - Pmax for 14C production in (mg C/mg Chl a/h)

STN NO.	BOT NO.	DEPTH (dbar)	*TEMP (deg C)	*SALINITY	CHL A (mg/m3)	OXY (mL/L)	Pm (§)	NO3 (mmol / m3)	PO4	SiO4
7	06	20.5	10.95	32.06		5.68		11.86	1.71	22.50
7	07	10.1	13.61	31.58	1.81	7.50		0.00	.76	11.40
7	08	5.1	14.10	31.29	1.42	7.50		.09	.63	7.80
8	01	155.1	6.93	33.85		1.49		32.90	2.33	54.80
8	02	124.5	6.93	33.83		1.61		33.10	3.62	54.80
8	03	95.7	7.10	33.73		2.11		31.30	3.56	49.50
8	04	72.8	7.30	33.64		2.23		31.60	2.20	48.10
8	05	55.1	7.75	33.39		3.23		26.30	1.53	37.90
8	06	19.3	11.19	32.10		5.70		11.50	1.94	22.50
8	07	10.5	13.52	31.71	1.98	6.73		.50	.38	13.80
8	08	5.2	14.54	31.66		7.19		0.00	.97	13.40
9	01	74.5	7.45	33.58		2.66		30.60	3.34	46.30
9	02	53.8	8.00	33.27		3.11		27.30	3.13	39.60
9	03	26.5	10.55	32.17		5.64		12.50	2.00	22.50
9	04	14.2	12.88	31.60	4.05	7.35		1.50	1.09	13.40
9	05	8.6	13.46	31.61	3.65	7.67		0.00	1.10	11.60
10	01	102.3	7.38	33.64						
10	02	74.4	7.51	33.55		2.65		29.90	3.11	45.00
10	03	49.7	8.65	32.81		3.71		25.10	2.86	37.40
10	04	30.4	9.09	32.35		4.03		24.40	2.73	37.40
10	05	20.7	9.90	31.88	6.27	5.68		14.10	1.28	22.30
10	06	9.9	11.38	31.41	11.98	7.38		8.50	.91	21.40
11	01	49.4	9.91	31.84				21.90	2.50	36.30
11	02	29.5	10.14	31.70				20.80	2.39	34.70
11	03	21.0	10.39	31.62	1.48			19.10	2.27	31.80
11	04	3.4	12.04	31.07	1.65			6.20	.89	22.00
12	01	239.7	7.30	33.93		3.05		28.60	3.13	40.10
12	02	200.8	7.98	33.86		2.85		27.20	2.69	35.20
12	03	151.0	9.01	33.50		3.67		23.80	2.55	27.20
12	04	124.8	9.53	33.16		4.52		16.90	2.35	18.90
12	05	100.8	9.57	32.62		5.83		9.80	1.51	11.10
12	06	76.0	9.85	32.47		6.26		5.80	1.58	6.50
12	07	56.2	10.09	32.42	.85	6.54		2.20	1.39	3.60
12	08	29.9	12.73	32.12	.13	6.62		0.00	1.11	2.00
12	09	18.4	14.45	32.02		6.22		.10	.53	2.20
12	10	7.5	14.61	32.00		6.19			.35	
13	01	253.4	7.18	33.97		2.87		30.50	3.08	44.30
13	02	199.7	7.92	33.86		2.93		29.30		38.30
13	03	146.9	8.88	33.43		3.74		23.90	2.47	27.60
13	04	125.4	9.16	33.13		6.36		16.90	1.96	18.90
13	05	100.8	9.19	32.57		6.40		8.00	1.20	7.10
13	06	71.4	9.83	32.45		6.28		6.20	1.07	6.90
13	07	54.0	10.04	32.42	.48	6.38		3.80	1.40	4.40
13	08	28.6	13.39	32.28	.15	6.81		0.00		2.20
13	09	19.0	14.52	32.07		6.28		0.00	.84	2.40
13	10	12.5	14.57	32.05		6.18		.10	.90	2.20
14	01	248.7	6.81	33.94		3.67		28.40	1.93	42.70

DATABASE LISTING FOR CRUISE 83-04. PAGE 3

* - Indicates that data is from an electronic sensor.

§ - Pmax for 14C production in (mg C/mg Chl a/h)

STN NO.	BOT NO.	DEPTH (dbar)	*TEMP (deg C)	*SALINITY	CHL A (mg/m3)	OXY (mL/L)	Pm (§)	NO3 (mmol / m3)	PO4	SiO4
14	02	199.5	7.49	33.88		3.17		28.90	2.81	39.20
14	03	150.8	8.06	33.58		3.95		24.80	2.17	29.80
14	04	126.3	8.48	33.21		4.62		20.10	1.84	22.70
14	05	98.6	8.88	32.60		6.14		10.20	1.07	10.00
14	06	68.4	9.32	32.42		6.57		6.10	.97	6.00
14	07	50.3	9.80	32.46		6.75		3.70	.92	4.00
14	08	44.1	10.22	32.41	.57	6.98		1.50	.63	3.80
14	09	21.5	14.05	32.14		6.32		0.00	.54	2.00
14	10	9.3	14.38	32.02	.09	6.21		.90	.47	2.20
15	01	215.5	6.64	33.96		2.58		32.00	2.83	50.10
15	02	200.7	6.85	33.95		2.66		31.50	2.78	47.70
15	03	145.1	7.22	33.83		3.29		28.60	2.12	39.40
15	04	125.0	7.59	33.65		2.93		25.30	2.49	36.50
15	05	99.3	8.25	32.98		3.92		18.90	2.06	26.30
15	06	67.0	8.95	32.48		5.59		7.80	1.04	6.70
15	07	43.4	9.78	32.40		5.88		6.10	1.00	10.50
15	08	32.0	10.55	32.13	.46	6.17		5.90	1.08	10.20
15	09	19.3	13.74	32.01		6.31		.10	.53	3.30
15	10	12.6	14.11	31.98	.12	6.25		.10	.57	3.10
17	01	127.9	7.31	33.79		2.23		31.60	2.50	51.00
17	02	97.0	8.23	33.13		3.92		16.10	2.90	20.90
17	03	73.4	8.78	32.67		4.25		20.50	2.83	30.50
17	04	49.9	9.26	32.37		4.15		18.50	2.68	28.90
17	05	29.6	9.73	32.11		4.02		19.30	2.43	34.00
17	06	19.2	10.24	32.05		5.31		11.00	2.17	14.00
17	07	9.0	13.26	31.12	1.15	6.42		1.60	1.31	4.00
17	08	5.0	13.96	30.98	1.29	6.49		.30	1.25	4.20
19	01	89.8	8.77	32.68		4.29		19.60	1.98	29.20
19	02	75.2	9.16	32.47		4.74		20.70	2.06	31.70
19	03	47.8	9.57	32.27		4.00		18.80	2.01	33.00
19	04	27.7	10.08	31.98		4.32		16.20	1.69	26.80
19	05	14.2	12.11	31.52		6.10		2.90	.72	7.10
19	06	9.2	13.86	31.31	1.17	6.49		.90	.49	4.00
19	07	4.4	14.14	31.26	1.08	6.54		.30	.43	3.30
20	01	19.9	13.18	31.10						
20	02	20.8	13.20	31.11	3.31		9.40	1.90	.55	5.40
20	03	1.9	14.15	31.18						
20	04	1.5	14.19	31.16	1.07			.30	.35	2.90
20	05	6.2	14.08	31.21						
20	06	5.9	14.09	31.20						
21	01	254.9	6.53	33.97		3.62		29.00	2.99	45.60
21	02	198.7	6.99	33.87		3.76		26.10	3.17	37.40
21	03	148.9	7.66	33.56		4.35		23.70	2.58	29.60
21	04	120.7	8.11	33.07		5.25		17.30	2.53	19.60
21	05	98.6	9.03	32.60		6.25		9.20	2.03	8.50
21	06	70.0	9.39	32.47		6.62		5.80	1.64	4.70
21	07	50.1	10.04	32.49		6.80		2.70	1.48	4.20

DATABASE LISTING FOR CRUISE 83-04. PAGE 4

* - Indicates that data is from an electronic sensor.

§ - Pmax for 14C production in (mg C/mg Chl a/h)

STN NO.	BOT NO.	DEPTH (dbar)	*TEMP (deg C)	*SALINITY	CHL A (mg/m3)	OXY (mL/L)	Pm (§)	NO3 (mmol / m3)	PO4	SiO4
21	08	38.3	10.60	32.44	.59	7.26		1.10	1.21	4.00
21	09	20.0				6.28		0.00	1.33	2.40
21	10	10.6	14.18	32.14	.05	6.32		.20	1.10	2.70
22	01	251.5	6.25	33.98		3.76		31.90	3.25	51.90
22	02	200.2	6.89	33.91		3.13		26.50	2.83	39.20
22	03	149.6	7.31	33.61		4.25		24.50	2.60	31.20
22	04	126.3	7.78	33.22		5.00		19.40	2.68	22.50
22	05	99.5	8.77	32.67		6.10		10.60	1.89	10.00
22	06	78.7	9.17	32.48		6.68		5.70	.74	4.20
22	07	53.5	10.05	32.45	.75	6.77		1.70	1.66	4.00
22	08	33.6	12.77	32.29	.14	6.70		0.00	1.47	2.90
22	09	27.5	13.46	32.13		6.38		.20	1.41	2.40
22	10	11.8	14.05	32.15		6.28		.30	1.41	2.70
23	01	252.8	6.72	34.02		3.27		29.60	3.10	45.70
23	02	199.6	6.83	33.90		4.12		30.00	3.10	44.50
23	03	143.3	7.30	33.54		4.33		25.00	2.94	31.80
23	04	122.3	7.61	33.20		4.97		20.30	2.66	24.50
23	05	99.7	8.49	32.74		5.87		11.60	1.89	11.80
23	06	73.3	9.02	32.50		6.57		7.00	1.88	4.70
23	07	49.3	9.81	32.46	.50	6.77		4.50	1.23	4.70
23	08	28.4	12.98	32.22	.14	6.56		0.00	.34	2.50
23	09	10.5	14.02	32.14		6.23		0.00	1.33	2.20
24	01	255.8	6.66	33.99		2.71		31.60	3.23	50.40
24	02	201.5	6.94	33.90		2.97		30.70	3.02	46.60
24	03	152.0	7.30	33.72		3.92		25.90	2.80	34.50
24	04	125.7	7.83	33.36		4.26		22.40	2.60	28.50
24	05	99.9	8.23	32.83		5.39		15.30	1.95	18.50
24	06	76.5	8.57	32.52		6.23		9.40	1.56	10.50
24	07	51.2	9.57	32.48	.61	6.53		5.20	1.55	4.70
24	08	42.0	10.19	32.45	.33	6.98		1.70		4.20
24	09	30.9	11.33	32.37		7.04		0.00	.93	3.60
24	10	10.7	13.69	32.06		6.43		.10	1.08	3.60
25	01	251.7	6.77	33.96		2.72		31.50	3.13	49.70
25	02	199.8	6.99	33.90		2.86		29.90	1.81	44.60
25	03	151.0	7.33	33.71		4.04		26.70	2.61	35.70
25	04	125.0	7.69	33.46		5.50		25.60	1.76	34.10
25	05	100.3	7.89	33.12		4.26		6.90	1.54	8.20
25	06	75.2	8.69	32.41		6.67		6.70	1.44	8.20
25	07	50.3	9.62	32.42		6.92		3.50	.73	6.20
25	08	30.6	12.09	32.25	.74	6.38		1.60	1.17	6.00
25	09	22.5	13.58	32.10	.48	6.45		0.00	.63	4.20
25	10	10.1	13.92	32.09		6.29		0.00	.41	4.20
27	01	154.8	7.37	33.66		3.31		27.20	3.41	40.60
27	02	128.0	7.53	33.51		3.59		24.90	3.27	35.30
27	03	100.3	8.22	32.87		4.91		17.70	1.32	23.80
27	04	74.3	8.81	32.47		6.33		7.90	1.71	7.50
27	05	48.8	10.68	31.99		5.87		7.30	1.97	14.20

DATABASE LISTING FOR CRUISE 83-04.
* - Indicates that data is from an electronic sensor.
§ - Pmax for 14C production in (mg C/mg Chl a/h)

STN NO.	BOT NO.	DEPTH (dbar)	*TEMP (deg C)	*SALINITY	CHL A (mg/m3)	OXY (mL/L)	Pm (§)	NO3 (mmol / m3)	PO4	SiO4
27	06	30.3	13.80	32.02		6.32		.30	1.36	5.10
27	07	19.2	13.80	31.87	.64	6.32		.20	1.48	5.50
27	08	12.0	13.80	31.66	.61	5.17		.30	1.48	6.70
29	01	72.5	8.90	32.42		6.26		14.70	1.78	21.60
29	02	49.3	10.95	32.06		6.30		5.80	1.26	11.10
29	03	30.5	13.49	31.91		6.28		.40	.99	4.90
29	04	19.9	13.66	31.50		6.21		.50	.89	7.10
29	05	8.2	13.88	31.25	.81	6.25		.20	.81	7.40
30	01	34.9	12.19	31.67		5.92		4.90	2.27	13.70
30	02	23.0	13.49	31.46		6.38		1.00	1.57	9.20
30	03	10.1	13.76	31.45	1.34	6.41		.60	1.89	8.80
30	04	2.1	13.80	31.45		6.44		.50	1.35	7.90
30	05	19.0	13.48	31.45						
30	06	18.8	13.50	31.45	1.23					
30	07	5.3	13.80	31.44						
30	08	5.2	13.80	31.45	1.34					
32	01	60.6	9.01	32.17		4.74		17.00	3.07	28.70
32	02	51.9	9.13	32.10				12.20		
32	03	32.6	9.77	31.67		5.36		12.20	2.52	21.50
32	04	21.5	10.24	31.50		5.47		11.30	2.51	20.60
32	05	13.5	11.96	30.92	11.14	7.32		.60	1.74	4.50
32	06	4.6	13.16	30.40	2.05			.30	1.22	1.60
34	01	66.1	8.54	32.35		4.74		9.30	2.28	15.60
34	02	50.9	8.70	32.21		4.87		16.80	2.53	27.40
34	03	31.8	9.70	31.67		5.34		12.60	2.14	22.00
34	04	18.2	10.88	31.13		6.56		5.90	1.62	9.60
34	05	11.5	11.40	30.93				1.30	1.19	6.40
34	06	3.9	14.44	30.07						
34	07	12.8	11.47	30.95	2.47					
34	08	12.8	11.40	30.96						
34	09	4.4	14.29	30.22			7.30			
34	10	4.0	14.45	30.17	.75					
36	01	103.7	8.16	32.73		4.25		20.50	2.85	33.30
36	02	77.3	8.71	32.39		4.91		16.40	2.46	26.00
36	03	51.4	9.40	31.94		5.17		14.20	2.29	23.10
36	04	30.3	10.50	31.27				9.50	1.91	16.90
36	05	12.3	12.09	30.82	2.83			1.00	1.20	8.40
36	06	4.7	13.57	30.22	1.27			.10	1.08	4.20
38	01	171.0	6.84	33.85						
38	02	149.9	6.90	33.82		2.65		29.90	3.50	48.40
38	03	123.5	7.08	33.57		2.97		27.80	3.24	46.00
38	04	100.3	7.27	33.39		3.36		21.80	2.89	35.50
38	05	73.4	8.26	32.63		4.82		17.20	2.06	26.70
38	06	49.3	10.46	31.90		5.87		7.70	.75	14.70
38	07	28.7	12.54	31.62				2.50	.92	9.10
38	08	19.2	12.76	31.43	.92			2.10	.75	8.20
38	09	7.4	13.86	31.22	.71			.80	1.41	6.90

DATABASE LISTING FOR CRUISE 83-04. PAGE 6

* - Indicates that data is from an electronic sensor.

§ - Pmax for 14C production in (mg C/mg Chl a/h)

STN NO.	BOT NO.	DEPTH (dbar)	*TEMP (deg C)	*SALINITY	CHL A (mg/m3)	OXY (mL/L)	Pm (§)	NO3 (mmol / m3)	PO4	SiO4
40a	01	250.3	6.05	33.99		2.56		32.70	3.50	57.90
40a	02	198.3	6.63	33.82		3.09		24.70	3.39	38.40
40a	03	150.1	7.53	33.45		3.50		23.40	3.24	33.90
40a	04	125.7	7.65	33.34		3.69		25.20	2.90	36.60
40a	05	99.5	7.75	33.20		3.92		22.80	3.06	33.90
40a	06	75.0	8.34	32.65		4.85		17.30	2.58	27.30
40a	07	52.8	9.63	32.13		4.78		12.30	2.10	21.70
40a	08	30.0	10.78	31.79				8.90	2.05	17.50
40a	09	20.0	11.67	31.80	.67			3.80	.69	11.10
40a	10	7.2	13.86	31.24	.54			.30	.92	9.10
41	01	46.1	10.92	31.47		6.03		5.70	1.66	12.90
41	02	32.6	11.45	31.32				4.10	1.73	11.10
41	03	16.2	12.41	31.05	1.54			1.20	1.21	8.40
41	04	9.1	13.11	30.92	.98			0.00	.36	6.40
43	01	60.5	10.03	31.62		5.74		9.60	1.91	16.20
43	02	31.1	11.39	31.29				2.50	1.51	8.90
43	03	20.9	12.59	30.88	.88			0.00	.67	6.70
43	04	13.1	13.15	30.79	.64			.10	.41	6.40
45	01	214.1	6.26	33.94		2.53		32.10	3.47	58.10
45	02	188.5	6.36	33.90		2.83		33.10	3.43	55.40
45	03	150.8	7.02	33.66		3.31		28.30	3.30	42.80
45	04	128.1	7.58	33.35		3.83		25.70	2.77	37.20
45	05	101.8	8.20	32.65		4.68		18.40	2.48	28.40
45	06	77.3	8.95	32.03		5.46		13.00	1.72	19.70
45	07	50.9	10.27	31.64		5.94		7.90	1.88	14.40
45	08	30.5	11.11	31.47				4.00	1.54	10.90
45	09	16.8	11.70	31.17	1.65			2.20	.75	8.40
45	10	7.2	13.37	30.51	.89			.60	.47	5.50
47	01	193.4	6.41	33.89		2.68		29.60	3.05	51.90
47	02	149.4	6.73	33.70		3.14		28.70	2.78	45.90
47	03	127.0	7.44	33.25		3.68		24.80	2.61	40.30
47	04	100.3	8.11	32.66		4.57		20.50	2.06	30.10
47	05	75.2	8.91	32.07		5.34		13.80	2.08	21.30
47	06	49.4	9.90	31.65		5.73		9.70	1.81	16.20
47	07	30.8	10.65	31.49				6.40	1.59	12.90
47	08	20.4	11.54	31.31	1.35			3.70	1.13	11.50
47	09	11.9	12.73	30.96	.87			.10		7.10
49	01	198.8	6.50	33.86		2.52		30.90	3.47	56.50
49	02	148.0	6.57	33.80		2.61		30.30	3.19	52.30
49	03	123.7	6.90	33.56		2.91		29.90	3.12	52.10
49	04	97.9	7.72	32.98				21.70	2.65	35.70
49	05	75.0	8.63	32.31		4.44		19.50	2.74	32.10
49	06	50.0	9.35	31.92		4.91		16.60	2.26	28.60
49	07	29.1	10.61	31.68				12.30	2.08	22.80
49	08	10.2	12.26	30.82	2.48			.20	.99	2.20
49	09	3.7	12.90	30.58	1.41			.30	.19	1.30
50	01	17.5	10.33	31.34			11.70			

DATABASE LISTING FOR CRUISE 83-04.

* - Indicates that data is from an electronic sensor.
§ - Pmax for 14C production in (mg C/mg Chl a/h)

STN NO.	BOT NO.	DEPTH (dbar)	*TEMP (deg C)	*SALINITY	CHL A (mg/m3)	OXY (mL/L)	Pm (§)	NO3 (mmol / m3)	PO4	SiO4
50	02	17.1	10.41	31.31	1.41			10.90	1.49	17.70
50	03	4.6	12.29	31.01			21.00			
50	04	4.6	12.28	31.01	3.12			.50	1.13	4.00
51	01	178.7	6.55	33.83						
51	02	144.5	6.65	33.76		2.60		31.10	3.34	54.10
51	03	125.6	6.88	33.60		2.80		29.80	3.04	50.80
51	04	99.8	7.73	33.01		3.65		23.20	2.13	38.30
51	05	74.7	8.66	32.33		4.42		19.20	2.10	31.90
51	06	49.7	9.32	31.88		4.86		17.30	1.99	29.90
51	07	29.7	9.84	31.62				14.40	1.67	26.40
51	08	9.9	11.87	31.34	.59			1.30	.52	8.20
51	09	5.0	13.10	31.31	1.50			.10	.84	4.20
53	01	139.4	6.79	33.67		2.53		29.80	3.66	55.80
53	02	126.5	6.96	33.55		2.67		30.20	3.92	56.40
53	03	101.3	7.60	33.12		3.57		24.40	3.50	39.50
53	04	77.6	8.32	32.60		4.14		20.80	2.78	35.50
53	05	51.6	9.15	32.09		4.76		16.20	2.89	27.40
53	06	31.1	10.08	31.84				11.90	2.60	21.80
53	07	7.9	12.52	31.12	2.39			.30	1.52	3.10
53	08	2.2	13.19	30.82	1.22			0.00	.83	2.20
55	01	99.5	7.55	33.19		3.58		22.00	3.49	36.10
55	02	77.7	7.96	32.82		3.92		22.10	2.95	35.90
55	03	52.0	8.59	32.24		4.42		18.90	3.03	31.00
55	04	29.5	9.63	31.64				14.10	1.17	22.90
55	05	18.1	10.83	31.38				6.60	2.09	15.10
55	06	5.0	14.04	30.70				.10	1.12	3.30
55	07	17.5	10.83	31.35			6.20			
55	08	17.6	10.82	31.36	3.12					
55	09	5.2	14.04	30.71			9.20			
55	10	4.5	14.04	30.71	1.01					
57	01	41.2	10.16	31.80		5.34		11.80	2.61	22.00
57	02	31.2	10.64	31.68				8.70	2.24	16.70
57	03	19.6	11.31	31.51	3.43			6.10	2.08	12.00
57	04	6.8	13.02	31.57	2.06			1.40	1.46	8.50
58	01	136.1	6.86	33.65		2.68		28.60	1.88	52.50
58	02	100.4	8.04	32.74		3.73		23.60	3.26	40.90
58	03	74.5	8.75	32.23		4.40		19.10	2.47	32.70
58	04	51.1	10.47	31.79		5.32		11.60	2.57	22.90
58	05	30.9	11.08	31.72				7.80	2.27	16.20
58	06	20.0	11.59	31.61	1.54			4.20	2.02	10.50
58	07	10.0	12.59	31.44	2.43			1.20	1.68	6.70
60	01	249.2	7.11	33.54		2.98		28.60	1.66	50.90
60	02	200.7	7.15	33.49		2.94		27.60	2.15	49.40
60	03	150.5	7.39	33.31		3.18		27.10	2.68	47.10
60	04	125.1	7.70	33.06		3.45		24.60	2.69	43.10
60	05	99.8	8.12	32.75		3.90		23.30	1.57	40.50
60	06	75.6	8.93	32.30		4.45		18.80	2.95	33.30

DATABASE LISTING FOR CRUISE 83-04. PAGE 8

* - Indicates that data is from an electronic sensor.

§ - Pmax for 14C production in (mg C/mg Chl a/h)

STN NO.	BOT NO.	DEPTH (dbar)	*TEMP (deg C)	*SALINITY	CHL A (mg/m3)	OXY (mL/L)	Pm (§)	NO3 (mmol / m3)	PO4	SiO4
60	07	50.2	10.36	31.74		5.56		11.50	2.46	21.60
60	08	30.4	10.84	31.55				9.60	1.74	18.00
60	09	19.7	10.82	31.47	1.15			9.70	1.86	17.80
60	10	9.8	10.61	31.37	1.16			10.10	1.94	18.20
62	01	229.1	7.42	33.32		3.18		25.00	3.11	43.30
62	02	197.5	7.44	33.29		3.22		26.60	3.49	46.60
62	03	149.8	8.04	32.79		3.71		24.20	3.34	41.70
62	04	124.7	8.15	32.70		3.73		23.70	3.30	41.30
62	05	99.6	8.35	32.51		4.02		22.40	2.68	39.10
62	06	74.9	8.80	32.15		4.42		20.00	2.77	34.60
62	07	48.3	9.26	31.73		4.80		18.40	1.22	31.30
62	08	27.7	9.60	31.23				17.70	1.59	30.60
62	09	17.9	9.68	31.03	.73			17.20	2.69	30.00
62	10	10.2	10.10	30.95				16.80	1.77	29.70
P62	01	12.8	10.05	30.96						
P62	02	12.9	10.06	30.96	2.05		3.00			
P62	03	3.2	10.39	30.84						
P62	04	3.1	10.52	30.81	.62					
64	01	180.1	7.67	33.10		3.41		23.30	3.20	42.40
64	02	151.0	7.84	32.94		3.36		18.20	3.34	31.90
64	03	125.4	8.00	32.78		3.48		24.90	3.24	43.70
64	04	99.5	8.28	32.53		3.68		24.10	3.30	42.10
64	05	74.8	8.68	32.12		4.23		20.00	2.89	35.30
64	06	50.2	9.44	31.58		4.36		17.70	2.54	31.00
64	07	30.9	9.65	31.29				16.10	2.59	27.50
64	08	16.9	10.15	30.97	4.00			16.10	2.25	27.90
64	09	4.3	10.32	30.76	6.15			15.00	1.86	25.70
65	01	114.7	7.66	33.08		3.17		25.10	3.00	47.90
65	02	102.7	8.35	32.54		3.95		21.90	1.19	38.80
65	03	75.3	9.09	32.09		4.72		16.20	1.30	26.80
65	04	49.8	9.64	31.83		4.93		15.10	1.95	28.10
65	05	30.6	11.19	31.68		5.69		8.00	1.72	17.10
65	06	15.6	10.41	31.05	11.29	7.15		7.00	1.22	7.10
65	07	4.3	13.40	30.70	.92	7.41		.30	.26	2.40
66	01	115.0	7.62	33.08		3.39		23.50	2.42	43.00
66	02	103.1	7.75	32.96		3.51		23.20	3.06	42.10
66	03	78.1	8.66	32.20		4.02		20.10	2.77	36.60
66	04	50.6	9.69	31.45		5.30		13.90	2.20	23.00
66	05	29.8	10.31	30.86		6.47		8.80	1.61	9.50
66	06	19.0	10.38	30.80	7.76	6.70		8.10	1.58	6.60
66	07	9.8	11.40	30.80	7.78	7.07		2.30	1.19	4.00
66	08	2.0	13.41	27.51						
67	01	130.8	7.08	33.49		2.84		28.00	3.18	54.50
67	02	99.0	7.76	32.97		3.80		22.50	2.56	39.60
67	03	74.6	8.51	32.31		4.76		17.90	2.32	29.20
67	04	51.3	9.15	31.84		5.20		13.80	2.24	21.30
67	05	31.1	10.18	31.22		5.92		9.60	1.20	12.60

DATABASE LISTING FOR CRUISE 83-04.
* - Indicates that data is from an electronic sensor.
§ - Pmax for 14C production in (mg C/mg Chl a/h)

STN NO.	BOT NO.	DEPTH (dbar)	*TEMP (deg C)	*SALINITY	CHL A (mg/m3)	OXY (mL/L)	Pm (§)	NO3 (mmol / m3)	PO4	SiO4
67	06	18.9	10.96	30.38	1.85	6.07		5.90	.85	11.10
67	07	9.3	12.71	28.19	5.72	7.50		.20	.25	1.80
67	08	1.6	13.55	27.09						
68	01	180.2	6.48	33.82		2.55		31.40	2.43	58.90
68	02	151.7	6.61	33.73		2.68		30.80	3.26	54.70
68	03	124.9	7.27	33.37		3.26		25.40	3.11	42.10
68	04	99.3	8.31	32.54		4.45		19.00	2.47	30.80
68	05	76.0	9.09	32.04		5.28		13.20	2.00	21.20
68	06	50.1	9.83	31.75		5.64		10.20	1.56	17.00
68	07	31.2	11.40	31.32	1.44	6.53		1.70	1.30	10.60
68	08	21.4	13.52	31.18	.62	6.60		0.00	1.12	7.70
68	09	12.0	13.93	30.99		6.53		0.00	1.08	8.00
69	01	38.7	10.75	31.43		5.83		7.30	.80	14.80
69	02	29.3	10.77	31.42		5.85		7.10	1.18	14.60
69	03	16.9	12.82	31.26	.85	6.51		.80	.47	9.70
69	04	7.0	13.66	31.14	.63	6.54		.20	.37	7.30
70	01	44.5	10.29	31.59		5.61		9.10	.90	16.40
70	02	32.0	11.19	31.37		6.18		9.30	2.37	16.60
70	03	19.5	12.86	30.89	.62	6.64				
70	04	6.9	13.40	30.80	1.02	6.62		0.00	1.64	7.20
71	01	110.3	7.97	32.86		4.30		20.90	3.14	33.10
71	02	75.4	9.35	32.00		5.34		13.60	2.65	21.90
71	03	50.8	9.97	31.67		5.60		10.80	2.50	18.40
71	04	29.6	11.53	31.28		6.18		3.60	1.80	10.70
71	05	16.3	12.47	31.06	1.68	6.68		.50	.55	8.90
71	06	8.1	12.68	31.03	1.43	6.72		0.00	1.57	9.20
72	01	208.1	5.90	33.95		2.22		33.10	3.70	62.10
72	02	151.8	6.80	33.52		2.87		30.30	1.67	51.80
72	03	124.5	7.41	33.21		3.77		25.10	3.25	40.20
72	04	100.0	8.03	32.76		5.14		15.30	2.92	22.30
72	05	73.0	8.79	32.32		5.03		16.30	2.78	25.50
72	06	49.8	9.44	31.78		5.27		13.50	2.38	21.40
72	07	35.8	11.54	31.41	.77	6.27		4.30	1.84	12.90
72	08	19.2	13.43	31.45	.50	6.42		1.00	1.57	10.30
72	09	10.6	13.49	31.43		6.45		0.00	1.62	10.00
73	01	147.9	7.19	33.31		3.50		26.20	3.38	44.20
73	02	102.4	8.17	32.62		4.81		17.40	2.92	27.60
73	03	74.4	8.84	32.15		5.83		11.60	2.43	16.50
73	04	52.9	9.78	31.77		5.98		8.50	2.18	13.40
73	05	31.4	11.08	31.29		6.51		2.40	1.68	9.10
73	06	9.5	13.82	31.14		6.47		0.00	1.52	9.10
73	07	10.4	13.82	31.15						
73	08	10.1	13.82	31.14	.19		8.50			
73	09	31.9	10.90	31.31						
73	10	32.8	10.83	31.40	.97		17.70			
74	01	129.8	8.06	32.74		4.82		17.50	1.82	27.40
74	02	100.5	8.44	32.48		5.43		14.10	2.38	20.90

DATABASE LISTING FOR CRUISE 83-04. PAGE 10

* - Indicates that data is from an electronic sensor.

§ - Pmax for 14C production in (mg C/mg Chl a/h)

STN NO.	BOT NO.	DEPTH (dbar)	*TEMP (deg C)	*SALINITY	CHL A (mg/m3)	OXY (mL/L)	Pm (§)	NO3 (mmol / m3)	PO4	SiO4
74	03	77.5	8.74	32.26		5.77		11.60	1.00	17.10
74	04	52.4	9.57	31.63		6.02		9.00	1.77	13.60
74	05	30.8	11.72	31.25	.95	6.79		.50	1.57	9.60
74	06	9.8	13.58	31.10	.35	6.48		0.00		8.90
75	01	252.8	5.54	34.03		1.86		34.90	4.02	70.30
75	02	199.8	6.15	33.86						
75	03	149.3	7.28	33.29		4.02		23.60	3.16	36.30
75	04	124.1	8.03	32.74		4.91		17.70	2.76	25.80
75	05	99.6	8.63	32.32		5.47		13.50	2.67	19.60
75	06	75.2	9.08	31.95		5.38		10.90	2.25	15.80
75	07	49.5	9.77	31.52		6.04		8.40	2.03	13.10
75	08	28.5	11.79	31.15	.93	6.70		1.00	.73	9.30
75	09	14.1	13.28	31.16		6.56		0.00	1.40	9.10
75	10	6.8	13.45	31.16	.46	6.55		0.00	.36	8.90
76	01	253.0	5.33	34.07		1.50		37.10	4.21	80.30
76	02	201.2	5.82	33.92		2.23		34.90		64.50
76	03	145.1	7.20	33.32		3.39		26.80	3.16	44.50
76	04	127.3	7.72	32.99		4.22		21.60	2.97	33.20
76	05	101.9	8.38	32.50		5.16		15.90	2.62	24.00
76	06	74.9	8.95	31.97		5.92		13.90	2.24	21.60
76	07	51.9	9.65	31.52		5.40		13.10	2.15	21.60
76	08	37.6	10.76	31.30		6.00		7.00	1.81	14.20
76	09	23.8	12.74	31.31	1.07	6.62		0.00	.90	8.50
76	10	9.6	13.40	31.18	.52	6.57		.20	1.06	8.50
77	01	200.7	5.70	33.98		1.77		35.10	4.02	73.40
77	02	150.0	6.71	33.56		3.66		29.70	3.58	51.80
77	03	124.4	7.23	33.16		3.42		26.30	2.34	46.30
77	04	100.8	8.20	32.50		4.78		17.40	2.76	27.60
77	05	74.7	9.10	32.08		5.87		11.00	1.16	16.00
77	06	49.2	10.04	31.59		5.93		8.30	1.77	14.50
77	07	32.0	9.95	31.22		5.42		12.00	2.10	21.60
77	08	20.4	11.08	31.06	1.63	6.51		5.70	1.80	14.70
77	09	11.2	13.62	31.17	.48	6.03		0.00	1.37	9.10
79	01	125.5	8.63	32.25		4.37		19.30	2.78	35.10
79	02	100.7	8.77	32.19		4.61		18.50	2.73	32.00
79	03	75.6	9.08	32.04		4.79		16.00	2.30	28.70
79	04	50.2	10.47	31.51		5.65		9.60	1.62	17.80
79	05	29.1	11.64	30.91				3.10	1.14	10.50
79	06	20.0	13.50	30.91	.88			0.00	.50	7.80
79	07	10.5	13.41	30.77	1.25			0.00	.88	6.70
79	08	20.2	13.49	30.90						
79	09	19.8	13.49	30.88	1.09		8.70			
82	01	161.3	6.61	33.56		2.50		28.60	3.64	55.60
82	02	125.2	7.55	32.92		3.20		25.50	1.52	46.90
82	03	99.2	8.18	32.40		4.35		19.30	1.51	33.60
82	04	74.5	9.10	31.92		5.54		12.20	1.44	18.90
82	05	49.4	9.62	31.57		5.65		10.70	1.77	16.70

DATABASE LISTING FOR CRUISE 83-04.
* - Indicates that data is from an electronic sensor.
§ - Pmax for 14C production in (mg C/mg Chl a/h)

STN NO.	BOT NO.	DEPTH (dbar)	*TEMP (deg C)	*SALINITY	CHL A (mg/m3)	OXY (mL/L)	Pm (§)	NO3 (mmol / m3)	PO4	SiO4
82	06	28.7	10.41	31.32	.76			6.60	1.69	13.60
82	07	19.0	12.65	31.19				.30	.79	7.30
82	08	9.8	13.47	31.28	.39			0.00	1.13	7.30
83	01	184.8	6.22	33.81		2.15		31.00	3.25	62.70
83	02	151.3	6.75	33.49		2.49		24.00	2.96	46.90
83	03	127.6	7.30	33.12		3.03		27.10	3.28	51.60
83	04	99.8	8.23	32.45		4.51		18.80	1.56	31.10
83	05	76.4	8.91	32.05		5.26		14.80	2.42	23.40
83	06	48.6	10.05	31.65		6.05		7.40	1.24	12.00
83	07	35.9	10.44	31.26				10.50	1.89	18.20
83	08	23.7	10.88	31.45	.67			5.70	1.76	14.20
83	09	10.0	13.69	31.29	.43			.40	1.38	8.50
84	01	117.9	7.45	33.00					2.92	
84	02	100.6	7.82	32.71		3.82		22.60		40.50
84	03	76.3	8.69	32.15		5.12		14.90		23.40
84	04	51.8	9.35	31.80		5.74		9.80		15.10
84	05	30.4	10.55	31.46				5.30	1.76	10.50
84	06	20.0	11.42	31.35	1.54			1.30	1.57	6.90
84	07	11.0	12.79	31.39	.86			0.00	1.39	6.90
85	01	4.8	12.81	31.51						
86	01	47.5	9.13	31.93						
86	02	30.6	11.14	31.64		6.22		3.60	1.36	8.70
86	03	20.7	12.05	31.54	5.62			.60	1.43	4.70
86	04	10.1	12.49	31.53	4.16			.30	1.13	5.60
92	01	25.6	12.26	31.58	4.85			.20	1.52	2.90
92	02	25.5	12.28	31.57						
92	03	14.8	12.32	31.57	4.29		16.00	0.00	1.29	2.20
92	04	14.6	12.35	31.58						
92	05	10.0	12.59	31.57	3.98			0.00	1.24	2.00
92	06	10.0	12.59	31.57						
92	07	4.7	12.61	31.56	4.44			0.00	1.43	2.20
92	08	4.7	12.61	31.57						
92	09	2.4	12.63	31.57	3.92			0.00	.84	2.40
92	10	2.5	12.63	31.57						
94	01	30.1	11.84	31.45	6.52		11.40	2.40	1.59	7.10
94	02	30.2	11.86	31.50						
94	03	9.1	12.55	31.49	3.07		12.70	0.00	1.42	3.10
96a	01	49.3	9.49	31.86				13.30	2.43	26.00
96a	02	33.4	9.58	31.79				11.60	2.17	20.30
96a	03	20.3	11.17	31.61			7.30			
96a	04	20.3	11.16	31.61	16.19			4.20	1.37	9.30
96a	05	10.3	12.04	31.56	4.50			0.00	1.08	2.40
96a	06	4.6	12.79	31.43				1.10	1.14	3.60
96g	01	30.8	11.93	31.53	5.46					
96g	02	30.6	12.02	31.56	5.59		3.90			
96j	01	27.8	11.60	31.19	13.93					
96j	02	27.7	11.73	31.57	18.72		5.40			

DATABASE LISTING FOR CRUISE 83-04. PAGE 12

* - Indicates that data is from an electronic sensor.

§ - Pmax for 14C production in (mg C/mg Chl a/h)

STN NO.	BOT NO.	DEPTH (dbar)	*TEMP (deg C)	*SALINITY	CHL A (mg/m3)	OXY (mL/L)	Pm (§)	NO3 (mmol / m3)	PO4	SiO4
96m	01	29.5	11.42	31.52	14.43		6.70			
96m	02	29.4	11.56	31.60						
96n	01	48.8	9.69	31.81	7.10			11.30	1.30	21.10
96n	02	36.7	9.82	31.77	8.07			8.40	1.28	15.30
96n	03	27.4	10.15	31.70	9.83			6.40	1.09	12.20
96n	04	15.1	11.90	31.61	4.75			.30	.50	2.40
96n	05	5.0	12.73	31.56	2.44			.30	.44	1.10
96p	01	26.9	11.08	31.55	8.46		8.60			
96p	02	26.9	11.14	31.61						
96q	01	53.8	9.52	31.81	1.39					
96q	02	41.7	9.74	31.74	2.53					
95q	03	29.2	10.99	31.61	15.24					
96q	04	19.6	12.21	31.54	3.37					
96q	05	9.9	12.59	31.58	2.94					
96s	01	26.1	11.86	31.58	15.49		5.90			
96s	02	25.9	11.85	31.60						
96t	01	47.8	9.81	31.76						
96t	02	44.9	9.81	31.76						
96t	03	31.2	11.17	31.73	11.13					
96t	04	20.4	12.07	31.52	4.79					
96t	05	10.0	12.60	31.60	2.67					
96v	01	20.2	11.51	31.61	11.37					
96v	02	20.4	11.48	31.62	11.43		7.10			
96w	01	69.1	9.31	31.86	.45					
96w	02	49.4	9.36	31.79	.51					
96w	03	25.3	11.30	31.65	9.51					
96w	04	17.7	12.05	31.57	3.76					
96w	05	8.7	12.76	31.51	2.14					
96y	01	80.3	9.05	31.96				15.10	1.52	28.60
96y	02	50.8	9.21	31.89				12.50	1.37	21.70
96y	03	30.5	9.71	31.58				9.60	1.09	16.20
96y	04	21.1	10.80	31.49				2.60	.74	6.90
96y	05	9.9	12.15	31.57				.30	.40	1.30
96y	06	22.8	11.30	31.67						
96y	07	22.9	11.28	31.60	12.59		4.20			
97	01	46.7	9.71	31.75				10.40	1.23	18.80
97	02	29.7	9.78	31.64				9.80	1.06	15.50
97	03	19.8	10.24	31.50	10.79			1.60	.65	4.40
97	04	10.0	12.34	31.61				.30	.30	1.60
98	01	88.0	8.73	32.11				17.40	1.66	33.70
98	02	75.0	8.73	32.11				15.10	1.63	28.60
98	03	50.3	8.99	31.98				14.20	1.28	25.00
98	04	29.8	10.37	31.62				2.90	.82	8.00
98	05	19.3	11.70	31.63	8.47			.20	.53	2.70
98	06	9.9	13.07	31.26				.10	.30	2.00
99	01	76.5	8.90	32.03				15.70	1.41	29.70
99	02	48.9	9.19	31.89				11.30	1.29	19.50

DATABASE LISTING FOR CRUISE 83-04.
* - Indicates that data is from an electronic sensor.
§ - Pmax for 14C production in (mg C/mg Chl a/h)

STN NO.	BOT NO.	DEPTH (dbar)	*TEMP (deg C)	*SALINITY	CHL A (mg/m3)	OXY (mL/L)	Pm (§)	NO3 (mmol / m3)	PO4	SiO4
99	03	25.5	10.52	31.44	13.76			2.70	.81	7.50
99	04	15.0	11.95	31.65				.20	.34	3.50
99	05	4.8	12.96	31.48				.10	.38	2.70
100	01	42.5	9.73	31.79				11.20	.86	20.80
100	02	28.8	9.76	31.77				10.30	.96	19.70
100	03	17.7	10.32	31.54	7.71			5.60	.86	11.50
100	04	10.0	12.02	31.43				2.30	.54	4.90
101	01	35.2	10.28	31.73				8.70	1.23	18.40
101	02	22.7	10.33	31.72				1.00	.62	4.40
101	03	9.8	12.46	31.54	1.87			.20	.48	1.80
101	04	4.8	12.76	31.52				.20	.39	1.80
101	05	10.1	12.59	31.57	1.87		3.60			
101	06	10.0	12.57	31.58						
111	01	24.7	10.83	31.68	6.00			6.30	1.07	14.80
111	02	19.8	10.89	31.69	5.66			5.60	1.01	13.50
111	03	14.6	11.20	31.62	3.69			1.40	.64	4.60
111	04	9.9	12.33	31.55	.99			.10	.41	2.20
111	05	4.8	12.70	31.56	.94			.20	.36	1.10
125	01	31.5	10.78	31.69				5.30	.98	11.70
125	02	21.5	10.79	31.68				5.30	1.00	11.90
125	03	9.7	12.60	31.59				.30	.43	2.20
125	04	5.1	12.68	31.56				.20	.41	2.20
125	05	10.0	12.66	31.56	.99		6.00			
125	06	9.7	12.65	31.56						
126	01	37.2	11.12	31.67				4.60	.79	11.90
126	02	28.9	11.14	31.67				3.90	.94	10.40
126	03	19.8	11.33	31.70				1.80	.69	6.60
126	04	10.0	12.34	31.61	2.66			.50	.46	3.10
127	01	35.9	11.59	31.66				3.00	.80	9.30
127	02	30.6	11.59	31.65				3.10	.82	9.90
127	03	20.6	11.61	31.64	3.36			3.00	.84	9.10
127	04	10.6	12.01	31.60				.80	.49	3.80
128	01	37.5	10.69	31.71				7.20	1.14	16.60
128	02	28.6	10.70	31.70				7.10	1.18	16.20
128	03	19.5	11.14	31.67	5.93			4.60	.95	12.00
128	04	8.5	12.80	31.57				.20	.48	1.50
129	01	35.1	10.67	31.71				7.10	1.10	16.20
129	02	29.4	10.68	31.70				7.10	1.20	15.90
129	03	21.0	10.74	31.69				6.60	1.06	14.80
129	04	20.9	10.74	31.69	6.49		6.10			
129	05	10.4	12.70	31.56				.30	.34	2.20
129	06	10.5	12.71	31.56	1.05		3.50			
133	01	155.5	7.25	33.18		2.87		25.00	1.92	50.90
133	02	126.3	7.62	32.90		3.02		25.70	2.46	53.50
133	03	102.7	8.04	32.62		3.41		24.00	1.83	46.90
133	04	76.0	9.37	31.97		4.82		15.00	1.42	27.00
133	05	53.0	10.66	31.74		5.40		7.10		15.00

DATABASE LISTING FOR CRUISE 83-04.

* - Indicates that data is from an electronic sensor.
§ - Pmax for 14C production in (mg C/mg Chl a/h)

STN NO.	BOT NO.	DEPTH (dbar)	*TEMP (deg C)	*SALINITY	CHL A (mg/m3)	OXY (mL/L)	Pm (§)	NO3 (mmol / m3)	PO4	SiO4
133	06	31.8	13.11	31.15				1.90	.58	9.50
133	07	19.4	13.15	31.14				2.20	.59	8.80
133	08	10.4	13.16	31.13				2.90	.59	10.40
134	01	111.1	9.27	31.88		4.40		16.20	1.64	33.80
134	02	101.0	9.51	31.77		4.60		15.40	1.14	30.90
134	03	74.8	9.85	31.66		4.86		14.00	1.55	28.50
134	04	50.5	11.44	31.28		5.76		5.50	.86	12.80
134	05	30.2	13.06	30.97				1.00	.57	6.00
134	06	21.5	13.24	30.97				.60	.53	6.00
134	07	10.9	13.12	30.89	.63			.60	.53	5.70
135	01	108.6	9.00	31.87		4.69		16.50	1.72	34.50
135	02	98.3	9.03	31.86		4.71		16.80	1.71	34.50
135	03	73.7	9.60	31.74		5.04		13.90	1.49	27.60
135	04	49.8	10.12	31.59		5.17		12.90	1.33	26.90
135	05	29.8	10.72	31.54				9.00	1.09	19.40
135	06	20.1	11.70	31.36				4.80	.78	11.90
135	07	9.3	12.26	31.14	.55			3.80	.75	10.40
136	01	82.4	8.54	31.97		4.49		19.70	1.80	39.70
136	02	74.4	8.72	31.89		4.64		18.80	1.82	38.00
136	03	50.9	11.09	31.37		5.71		6.40	1.00	13.20
136	04	31.0	12.82	30.98				1.50	.70	5.50
136	05	15.6	12.78	30.60				1.60	.61	6.40
136	06	5.1	12.45	28.73	1.63			2.10	.70	10.80

ZOOPLANKTON HAUL RESULTS - CRUISE 83-04 STANDARD LIST - STATION 3- 21 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	3	7	10	15	17	19	21
AMPHIPODS*							
UNIDENTIFIED JUVENILES	982.4			358.1			209.7
PARATHEMISTO SP.	81.9	21.5	5.4	5.6	97.7	129.4	571.5
EUPRIMNO SP.							5.2
CYPHOCARIS SP.	10.9						21.0
CHAETOGNATHS*							
UNIDENTIFIED JUVENILES	5828.8	3420.8	2465.6	748.6	988.6	1304.9	2789.2
SAGITTA ELEGANS	98.2	3604.0	629.9	5.6			62.9
EUKROHNIA HAMATA		175.6	26.9	162.0			5.2
CTENOPHORES*							
PLEUROBRACHIA SP.					100.5	903.0	
EGGS LARVA*							
UNIDENTIFIED EGGS.			11041.4				
COPEPOD NAUPLII	654.9		15181.3		659.1	7658.7	692.0
BARNACLE NAUPLII			6901.6			25536.4	1043.3
EUPHAUSID LARVA	654.9		15181.3	358.1	5.6	51072.7	692.0
DECAPOD LARVA	5.5	32.3	21.5		16.8	437.7	47.2
EUPHAUSIDS*							
JUVENILES	32.7		5.4	27.9	39.1	426.2	31.5
EUPHAUSIA PACIFICA	120.1	37.7	5.4	27.9			15.7
THYSANOESSA SPINIFERA		32.3	80.8		44.7		
LARVACEANS*							
LARVACEANS	1637.3		1378.2	715.1		40859.3	9374.1
MEDUSAE*							
PHIALIDIUM SP.				22.3	206.7	225.7	
AGLANTHA SP.	21.8			5.6		539.0	152.0
PROBOSCIDACTYLA SP.						85.3	
OSTRACODS*							
CONCHOECIA SP.	1309.8	1406.0		1072.6			1735.4
SIPHONOPHORES*							
NECTOPHORES BRACTS	2319.5			5.6		96.4	104.9
COPEPODS*							
ACARTIA LONGIREMIS <=S3/4	326.9	8425.4	59336.3		18431.6	14045.5	1735.4
ACARTIA LONGIREMIS <=S4/5	17988.5	47734.8	168351.0		54647.0	34472.4	
ACARTIA LONGIREMIS S6M	1309.8	58961.5	57958.2	715.1	144185.7	81713.0	1735.4
ACARTIA LONGIREMIS S6F	3596.6	57555.5	75895.8	6798.9	69129.8	53627.4	347.1

ZOOPLANKTON HAUL RESULTS - CRUISE 83-04 STANDARD LIST - STATION 3- 21 PAGE 2
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	3	7	10	15	17	19	21
CALANUS MARSHALLAE S3		1928.6	2325.6	178.8	16460.0	11936.8	
CALANUS MARSHALLAE S4	326.9	4212.7	2842.5	5547.5	8556.7	5968.4	
CALANUS MARSHALLAE S5		5085.4	2928.6	10022.3	865.7	340.8	
CALANUS MARSHALLAE S6M		2806.7	1033.6	1251.4	259.7	1448.1	
CALANUS MARSHALLAE S6F	326.9	6663.8	2497.9	1787.7	776.4	1194.8	21.0
CALANUS PACIFICUS <=S5			344.5		659.1	85.3	
CALANUS SP. S1/2	982.4	4212.7	8279.7		23698.6	52350.1	
CALANUS TENUICORNIS <=S4	6865.7			14676.0			18407.5
CALANUS TENUICORNIS S5	2286.8			1072.6			2081.4
CALANUS TENUICORNIS S6M	654.9			715.1			692.0
CALANUS TENUICORNIS S6F	982.4			357.5			1735.4
CENTROPAGES ABDOMINALIS <=S4		700.3	6901.6				
CENTROPAGES ABDOMINALIS S5		1406.0	13797.8			1277.4	
CENTROPAGES ABDOMINALIS S6M			2761.7			3832.1	
CENTROPAGES ABDOMINALIS S6F			11041.4			5109.5	
EUCALANUS BUNGI S3	982.4			178.8		170.7	83.9
EUCALANUS BUNGI S4	1320.8			268.2			146.8
EUCALANUS BUNGI S5M	10.9		5.4		16.8	85.3	
EUCALANUS BUNGI S5F	337.8			195.5	103.3	5.5	
EUCALANUS BUNGI S6F	27.3	700.3	86.1	173.2	16.8	22.0	31.5
EUCHAETA JAPONICA S3	660.4						62.9
EUCHAETA JAPONICA S4							21.0
EUCHAETA JAPONICA S5M				5.6			5.2
EUCHAETA JAPONICA S5F				5.6			15.7
EUCHAETA JAPONICA S6M	654.9	700.3					
EUCHAETA JAPONICA S6F	654.9						31.5
METRIDIA SP. <=S3	12754.6		4139.9	5726.3	659.1	7658.7	2778.7
METRIDIA SP. S4	6216.3			1430.2			1389.3
METRIDIA PACIFICA S5M	1637.3			715.1			347.1
METRIDIA PACIFICA S5F	1637.3			715.1			
METRIDIA PACIFICA S6M			2761.7	358.1			
METRIDIA PACIFICA S6F	3269.1						
NEOCALANUS CRISTATUS S2	326.9						
NEOCALANUS CRISTATUS S3							167.8
NEOCALANUS CRISTATUS S4	54.6		5518.0	150.8			115.3
NEOCALANUS CRISTATUS S5	16.4	2807.0	1378.2	134.1			89.1

ZOOPLANKTON HAUL RESULTS - CRUISE 83-04 STANDARD LIST - STATION 3- 21 PAGE 3
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	3	7	10	15	17	19	21
NEOCALANUS PLUMCHRUS S2				5.6			
NEOCALANUS PLUMCHRUS S5	5.5						
OITHONA HELGOLANDICA	99422.4	25270.8	16559.5	64419.0	81641.0	165980.8	47227.2
OITHONA SPINIROSTRIS	18970.9	700.3		4296.1		2549.2	4860.1
PARACALANUS SP. <=S4	982.4	3512.4	1378.2	358.1	659.1	11490.8	1389.3
PARACALANUS SP. S5	6216.3	14739.0	2761.7	2502.8	7244.2	22981.6	17710.2
PARACALANUS SP. S6M	982.4	1406.0	1378.2	358.1		10213.4	2778.7
PARACALANUS SP. S6F	15696.3	16145.1	12419.6	6441.3	4607.9	52350.1	29863.0
PSEUDOCALANUS SP. <=S3	15368.8	37903.4	179419.4	6798.9	28971.2	31917.7	5557.4
PSEUDOCALANUS SP. S4	18970.9	46328.8	67616.0	10379.9	26994.0	33195.1	10071.4
PSEUDOCALANUS SP. S5M	11772.2	15444.7	40020.5	5726.3	8556.7	26808.2	2081.4
PSEUDOCALANUS SP. S5F	11444.7	11932.4	23461.0	7156.4	17113.5	14045.5	1389.3
PSEUDOCALANUS SP. S6M	10467.8	15444.7	20699.3	5726.3	9215.8	35749.8	1043.3
PSEUDOCALANUS SP. S6F	36953.9	29483.4	33118.9	25407.8	28312.1	51072.7	6249.4
SCOLECITHRICELLA MINOR <=S4	2941.7	2106.3	2761.7	1787.7			347.1
SCOLECITHRICELLA MINOR S5	1637.3		2761.7	2145.3			1043.3
SCOLECITHRICELLA MINOR S6M	326.9						692.0
SCOLECITHRICELLA MINOR S6F	2614.2	2106.3		358.1			692.0

ZOOPLANKTON HAUL RESULTS - CRUISE 83-04 VARIANTS LIST - STATION 3- 21 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	3	7	10	15	17	19	21
BARNACLE CYPRIDS					1277.4		
BIVALVE LARVA					7658.7		
CALANUS MARSHALLAE/PACIFICUS S6M					85.3		
CALANUS MARSHALLAE/PACIFICUS S6F	326.9	705.7		178.8	86.6		
CALANUS MARSHALLAE/PACIFICUS <=S5			344.5		85.3		
CANDACIA COLUMBIAE S6M							5.2
CANDACIA COLUMBIAE <=S4	326.9						
CLAUSOCALANUS SP. S6F	3270.0	705.7		1072.6		3832.1	12850.1
CLAUSOCALANUS SP. S6M	326.9						4168.0
CLAUSOCALANUS SP. S5	654.0		1378.2	2860.3	2636.3	3832.1	16666.9
CLAUSOCALANUS SP. <=S4		705.7	1378.2				15628.8
CLIONE SP.	10.9						
CORYCAEUS SP.		705.7	5518.0			2554.7	
CRYPTONISCID						1277.4	
ECHINOPLUTEUS LARVAE				715.1		2554.7	
EPILABIDOCERA AMPHITRITE <=S4			5518.0			1277.4	
EUCHIRELLA SP. S6F	16.4						
FISH LARVAE	10.9				5.6	16.5	15.7
GAETANUS SP. S5							62.9
GAETANUS SP. <=S4							125.8
GAIDIUS COLUMBIAE <=S4	326.9						
HETERORHABDUS SP. S6F				358.1			21.0
HETERORHABDUS SP. S6M							21.0
HETERORHABDUS SP. S5							125.8
LUCICUTIA SP. <=S4							347.1
LUCICUTIA SP. S5	326.9						
MICROCALANUS SP. S6F							347.1
NATANTIA					11.2		
NEMATOSCELIS SP.	97.3						31.5
ONCAEA SP.				1072.6		1277.4	
PLEUROMAMMA SP.							21.0
POLYCHAETE LARVAE						11490.8	
RACOVITZANUS ANTARCTICUS S6F							347.1
RACOVITZANUS ANTARCTICUS S5	992.4						
SAGITTA SCRIPPSAE	125.5			27.9			62.9
SALP	5.5			50.3			10.5

ZOOPLANKTON HAUL RESULTS - CRUISE 83-04 VARIANTS LIST - STATION 3- 21 PAGE 2
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	3	7	10	15	17	19	21
SARSIA SP.	5.5						5.2
SCAPHOCALANUS SP. S6F	38.2			100.6			262.1
TOMOPTERIS SEPTENTRIONALIS				5.6			
UNIDENTIFIED AMPHIPOD							12152.8
UNIDENTIFIED COPEPODITES	6865.7	4212.7	19315.8	715.1			21.0
UNIDENTIFIED MEDUSAE	16.4			358.1		85.3	
LIMACINA SP.	1637.3	705.7				2554.7	
AEQUOREA SPP.					16.8		
OCTOPOD JUVENILE	5.5						5.2
CLAUSOCALANUS SP.(2) <=4							1735.4
CLAUSOCALANUS SP.(2) 5	1962.0						
CLAUSOCALANUS SP.(2) 6M	327.0						8336.1
CLAUSOCALANUS SP.(2) 6F	8176.0						713.0
EUCHIRELLA POSTRATA 6F							8944.0
CALANOID(1)							

ZOOPLANKTON HAUL RESULTS - CRUISE 83-04 STANDARD LIST - STATION 24- 42 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	24	27	31	34	37	40	42
AMPHIPODS*							
UNIDENTIFIED JUVENILES	949.7				44.0		49.4
PARATHEMISTO SP.	341.9	53.7			11.0	82.5	43.9
EUPRIMNO SP.						5.5	
CHAETOGNATHS*							
UNIDENTIFIED JUVENILES	1184.4	359.7	186.6	92.2	362.1	222.6	43.9
SAGITTA ELEGANS	11.2	54.7			11.0	747.6	
EUKROHNIA HAMATA	5.6				5.5	66.0	
CTENOPHORES*							
PLEUROBRACHIA SP.			5.6			11.0	153.8
EGGS LARVA*							
UNIDENTIFIED EGGS.	176.0						
COPEPOD NAUPLII	703.9	344.9	2910.6	21109.6			2147.8
BARNACLE NAUPLII		517.4	18201.1	8168.9	376.9		714.1
EUPHAUSID LARVA	352.0	689.8	10189.9	4095.6			714.1
DECAPOD LARVA			726.3	5.6			
EUPHAUSIDS*							
JUVENILES					44.6	93.5	
EUPHAUSIA PACIFICA	50.3	10.9			88.0	22.0	5.5
THYSANOESSA SPINIFERA		27.4			49.5		
LARVACEANS*							
LARVACEANS	9150.8		18201.1	4766.1	376.9		5009.7
MEDUSAE*							
PHIALIDIUM SP.	5.6	98.5	11.2	27.9	44.0	5.5	65.9
AGLANTHA SP.	368.7	10.9	45.3				
PROBOSCIDACTYLA SP.		10.9	45.3	5.6			
OSTRACODS*							
CONCHOECIA SP.	2463.7						714.1
SIPHONOPHORES*							
NECTOPHORES BRACTS			726.3				65.9
COPEPODS*							
ACARTIA LONGIREMIS <=S3/4		344.9	2910.6	4084.5	1139.1	346.3	3581.5
ACARTIA LONGIREMIS <=S4/5		344.9	4368.7	9532.3	3015.5	1555.7	10019.5
ACARTIA LONGIREMIS S6M		859.6	14558.7	16343.5	3769.3	3463.2	6438.0
ACARTIA LONGIREMIS S6F		2414.4	6553.1	11577.3	12061.9	6057.9	5009.7
CALANUS MARSHALLAE S3		2759.7	905.0	5017.6	5277.1	2941.0	175.8

ZOOPLANKTON HAUL RESULTS - CRUISE 83-04 STANDARD LIST - STATION 24- 42 PAGE 2

(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	24	27	31	34	37	40	42
CALANUS MARSHALLAE S4	21.8	17585.3	1821.2	2274.1	20348.9	8311.8	351.6
CALANUS MARSHALLAE S5	48.6	12586.7	407.8	449.2	6405.1	6233.8	131.8
CALANUS MARSHALLAE S6M	336.9		45.3	92.2		1731.6	
CALANUS MARSHALLAE S6F	293.3	2584.1	363.7	547.0	2448.7	10043.4	65.9
CALANUS SP. S1/2		517.4	10189.9	9532.3	3389.7	1209.4	1433.7
CALANUS TENUICORNIS <=S4	8446.9	4998.5	5095.0			346.3	
CALANUS TENUICORNIS S5	1229.1	1724.6				173.2	
CALANUS TENUICORNIS S6F	1229.1						
CENTROPAGES ABDOMINALIS <=S4					376.9		2147.8
EUCALANUS BUNGI S3	43.0	86.0					
EUCALANUS BUNGI S4	200.0		5.6				
EUCALANUS BUNGI S5M	43.0						
EUCALANUS BUNGI S5F	32.4				44.6	16.5	
EUCALANUS BUNGI S6F	16.8			16.8	50.1	77.0	
EUCHAETA JAPONICA S3	92.2						
EUCHAETA JAPONICA S4	141.3					5.5	
EUCHAETA JAPONICA S5M	43.6						
EUCHAETA JAPONICA S5F	22.3						
EUCHAETA JAPONICA S6M	27.9					5.5	
EUCHAETA JAPONICA S6F	50.3						
METRIDIA SP. <=S3	2988.8	344.9	726.3		1145.0	2941.0	
METRIDIA SP. S4	140.8	1724.6			765.0	1039.0	
METRIDIA PACIFICA S5M	603.4	1034.7			377.0	173.2	
METRIDIA PACIFICA S5F	173.2						
METRIDIA PACIFICA S6M						173.2	
METRIDIA PACIFICA S6F	346.4	344.9				173.2	
NEOCALANUS CRISTATUS S3	21.8						
NEOCALANUS CRISTATUS S4	33.5	5.5	5.6	5.6		16.8	
NEOCALANUS CRISTATUS S5	100.6	5.5				39.1	
NEOCALANUS PLUMCHRUS S5				5.6			
OITHONA HELGOLANOICA	30966.5	36041.0	60419.0	98066.4	78760.0	77906.4	198263.7
OITHONA SPINIROSTRIS	5631.3	1724.6	2910.6	681.7	376.9	1039.0	714.1
PARACALANUS SP. <=S4	527.9						1433.7
PARACALANUS SP. S5	4044.7	1034.7	1458.1		1881.9	173.2	13601.0
PARACALANUS SP. S6M	703.9	344.9	1458.1	676.1			5723.8
PARACALANUS SP. S6F	11083.8	2414.4	1458.1	2726.7	1881.9	173.2	13601.0

ZOOPLANKTON HAUL RESULTS - CRUISE 83-04 STANDARD LIST - STATION 24- 42 PAGE 3
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	24	27	31	34	37	40	42
PSEUDOCALANUS SP. <=S3	2636.9	3274.0	93905.0	108962.0	32405.3	14369.7	72289.6
PSEUDOCALANUS SP. S4	5279.3	11552.0	63329.6	53802.1	25626.0	15062.3	56546.3
PSEUDOCALANUS SP. S5M	3167.6	7413.0	48770.9	44945.9	21856.7	6926.5	25054.2
PSEUDOCALANUS SP. S5F	1229.1	5518.7	29843.6	31323.6	14697.7	6057.9	20753.1
PSEUDOCALANUS SP. S6M	877.1	10862.1	13100.6	28602.5	9420.6	9174.8	6443.4
PSEUDOCALANUS SP. S6F	5452.5	19485.0	34938.5	87852.4	38436.3	27007.8	25054.2
SCOLECITHRICELLA MINOR <=S4	1933.0	2584.1			753.9		
SCOLECITHRICELLA MINOR S5	877.1	1724.6		681.7	1128.1	692.7	
SCOLECITHRICELLA MINOR S6M	176.0					173.2	
SCOLECITHRICELLA MINOR S6F	703.9	1034.7			376.9	173.2	

ZOOPLANKTON HAUL RESULTS - CRUISE 87-04 VARIANTS LIST - STATION 24- 42 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	24	27	31	34	37	40	42
AEGISTHUS SP.	176.0						
BARNACLE CYPRIDS				681.7			565.8
CALANUS MARSHALLAE/PACIFICUS S6F	21.8						
CANDACIA COLUMBIAE S6M	16.8						
CANDACIA COLUMBIAE S5	16.8						
CLAUSOCALANUS SP. S6F	4748.6	1379.7	2184.4		376.9	1209.4	
CLAUSOCALANUS SP. S6M	877.1	172.5					
CLAUSOCALANUS SP. S5	6687.2	689.8	1458.1	1357.8	753.9	863.1	
CLAUSOCALANUS SP. <=S4	5452.5	517.4			753.9		
CORYCAEUS SP.			726.3	681.7			
CRYPTONISCID					376.9		
ECHINOPLUTEUS LARVAE	176.0						
EVADNE SP.						40797.5	
FISH LARVAE	11.2	129.2	5.6				22.0
GAETANUS SP. S6F	176.0						
GAETANUS SP. S5	363.1						
GAETANUS SP. <=S4	527.9						
GAIDIUS VARIABLIS S6F	192.7						
HETERORHABDUS SP. S6M	16.8						
LUCICUTIA SP. S5	352.0						
MICROCALANUS SP. S5	527.9				376.9	173.2	
MICROCALANUS SP. S6F	703.9				376.9	692.6	
NATANTIA		5.5	16.8	5.6			
NEMATOSCELIS SP.	44.7						
ONCAEA SP.	352.0					173.2	
PLEUROMAMMA SP.	360.0						
PODON SP.			726.3				3581.5
POLYCHAETE LARVAE			726.3				714.1
RACOVITZANUS ANTARCTICUS S6F	173.0						
SAGITTA SCRIPPSAE	16.8					11.0	
SALP							11.0
SCAPHOCALANUS SP. S5	175.0						
TOMOPTERIS SEPTENTRIONALIS	86.6						
UNIDENTIFIED AMPHIPOD						5.5	
UNIDENTIFIED COPEPODITES	1933.0	154.9			1128.1	519.5	1428.2
UNIDENTIFIED MEDUSAE	5.6						

ZOOPLANKTON HAUL RESULTS - CRUISE 83-04 VARIANTS LIST - STATION 24- 42 PAGE 2
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	24	27	31	34	37	40	42
LIMACINA SP.	352.0		726.3			173.2	4295.6
BEROE SPP.		5.5					
CLAUSOCALANUS SP.(2) <=4	352.0						
CLAUSOCALANUS SP.(2) 5	2111.7						
CLAUSOCALANUS SP.(2) 6M							
CLAUSOCALANUS SP.(2) 6F	4927.4						
CTENOCALANUS VANUS 5						173.2	
EUCHIRELLA ROSTRATA 6F	5.6						
EUCHIRELLA PSEUDOPULCHRA <=4	181.6						
EUCHIRELLA PSEUDOPULCHRA 5	5.6						
EUCHIRELLA PSEUDOPULCHRA 6F	27.9						
CALANOID(1)		172.0					714.0

ZOOPLANKTON HAUL RESULTS - CRUISE 83-04 STANDARD LIST - STATION 46- 68 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	46	50	54	56	60	63	68
AMPHIPODS*							
UNIDENTIFIED JUVENILES		700.1			176.0	273.2	
PARATHEMISTO SP.	136.7	10.8		42.5	246.1	531.6	11.2
CYPHOCARIS SP.					181.4	55.0	
CHAETOGNATHS*							
UNIDENTIFIED JUVENILES	349.5	974.7	770.9	570.4	1738.1	495.8	1430.4
SAGITTA ELEGANS	65.8	372.1	48.2		825.9	1280.8	106.2
EUKROHNIA HAMATA	182.3	479.3	77.1		545.2	120.9	50.3
CTENOPHORES*							
PLEUROBRACHIA SP.			14.5	16.1			
EGGS LARVA*							
UNIDENTIFIED EGGS.		2805.7	7661.3		349181.5		
COPEPOD NAUPLII		21051.0	8938.2	18310.6	57244.2	49024.1	
BARNACLE NAUPLII		7717.1	7661.3	4067.8	80136.5		
EUPHAUSID LARVA		6316.9	1276.9	3470.6	17170.6	6129.4	
DECAPOD LARVA	40.5	10.8	375.8	785.6	1500.6	264.4	
EUPHAUSIDS*							
JUVENILES	15.2	184.2	19.3	37.7		131.9	11.2
EUPHAUSIA PACIFICA	25.3	317.7	33.7		156.5	55.0	27.9
THYSANOESSA SPINIFERA		59.2	38.5	5.4			16.8
LARVACEANS*							
LARVACEANS		14734.1	22988.8	14915.3	57244.2	3061.9	
MEDUSAE*							
PHIALIDIUM SP.	15.2	21.5	14.5	75.3	5.4		16.8
AGLANTHA SP.					5.4		5.6
PROPOSCIDACTYLA SP.		92.1					11.2
COPEPODS*							
ACARTIA LONGIREMIS <=S3/4	6487.7	14734.1	2553.8	7457.7	28619.4	9191.3	2771.4
ACARTIA LONGIREMIS <=S4/5	12980.4	44207.7	15322.6	21022.4	108761.3	18382.7	12465.7
ACARTIA LONGIREMIS S6M	14282.0	25262.3	14045.7	24412.3	188903.1	6129.4	9694.3
ACARTIA LONGIREMIS S6F	10387.4	30173.7	34480.7	14237.4	194624.9	76603.6	11080.0
CALANUS MARSHALLAE S3	1646.0	5611.5	13583.2	9669.1	10013.0		983.4
CALANUS MARSHALLAE S4	2512.0	31579.3	17905.3	7667.5	58653.0	6893.5	1162.2
CALANUS MARSHALLAE S5	3059.0	37890.8	6480.8	1183.8	75823.6	16843.4	2503.2
CALANUS MARSHALLAE S6M	785.0	2105.6		84.5	7152.2	3061.9	178.8
CALANUS MARSHALLAE S6F	1489.0	18945.4	1233.5	296.5	17165.2	9955.4	1966.8

ZOOPLANKTON HAUL RESULTS - CRUISE 83-04 STANDARD LIST - STATION 46- 68 PAGE 2
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	46	50	54	56	60	63	68
CALANUS PACIFICUS S6M	1296.5						
CALANUS SP. S1/2	2598.1	5611.5	21711.9	16954.6	11448.8		1385.7
CENTROPAGES ABDOMINALIS <=S4		700.1	1276.9		5721.7		
CENTROPAGES ABDOMINALIS S5		1405.6					
CENTROPAGES ABDOMINALIS S6M		700.1	1276.9	1355.9			
CENTROPAGES ABDOMINALIS S6F			2553.8	678.0			
EUCALANUS BUNGI S4	40.5						
EUCALANUS BUNGI S5M	15.2	92.1					
EUCALANUS BUNGI S5F	20.3		4.8		10.8		5.6
EUCALANUS BUNGI S6M	5.1						
EUCALANUS BUNGI S6F	126.6	32.3	4.8		37.8	5.5	55.9
EUCHAETA JAPONICA S5M	10.1	59.2			27.0		5.6
EUCHAETA JAPONICA S5F	15.2	43.1			16.2		
EUCHAETA JAPONICA S6M	5.1	5.4			10.8	5.5	11.2
EUCHAETA JAPONICA S6F		48.5			5.4	16.5	
METRIDIA SP. <=S3	5191.2						2771.4
METRIDIA SP. S4	2598.1					3061.9	
METRIDIA PACIFICA S5M	1296.5						
METRIDIA PACIFICA S5F	1296.5				5721.7	3061.9	
METRIDIA PACIFICA S6M		2105.6			5721.7	9191.3	
METRIDIA PACIFICA S6F	2598.1	3511.2					1385.7
NEOCALANUS CRISTATUS S4	5.1		4.8	5.4			
NEOCALANUS CRISTATUS S5	70.9	425.4	14.5		59.4	5.5	11.2
NEOCALANUS PLUMCHRUS S5	141.8	194.9	320.4		566.8	5.5	27.9
OITHONA HELGOLANDICA	249251.7	23156.7	48526.5	33903.9	74414.8	6123.9	218861.8
OITHONA SPINIROSTRIS		700.1			5721.7		
PARACALANUS SP. <=S4	1296.5						
PARACALANUS SP. S5	9085.8		2553.8				4157.1
PARACALANUS SP. S6M	1296.5		1276.9				
PARACALANUS SP. S6F	3894.6	7017.0	3830.7	3389.8			2771.4
PSEUDOCALANUS SP. <=S3	45439.1	165602.6	153245.5	77304.7	.107+007	242058.5	24931.4
PSEUDOCALANUS SP. S4	93471.3	69470.1	68956.6	53570.4	824294.8	186905.0	105273.8
PSEUDOCALANUS SP. S5M	88275.1	45613.3	43418.9	33903.9	332005.5	85794.9	59562.6
PSEUDOCALANUS SP. S5F	93471.3	25962.4	42142.0	25090.3	349176.1	156269.1	59562.6
PSEUDOCALANUS SP. S6M	45439.1	33679.5	61300.1	38649.6	389249.7	235929.1	15237.1
PSEUDOCALANUS SP. S6F	184344.5	30173.7	93222.3	71197.6	337727.3	661836.2	109430.9

ZOOPLANKTON HAUL RESULTS - CRUISE 83-04 STANDARD LIST - STATION 46- 68 PAGE 3
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	46	50	54	56	60	63	68
SCOLECITHRICELLA MINOR <=S4	1296.5						
SCOLECITHRICELLA MINOR S5	1296.5					3061.9	
SCOLECITHRICELLA MINOR S6M					5721.7		
SCOLECITHRICELLA MINOR S6F	1296.5					3061.9	1385.7

ZOOPLANKTON HAUL RESULTS - CRUISE 83-04 VARIANTS LIST - STATION 46- 68 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.	: 46	50	54	56	60	63	68
AETIDEUS ARMATUS S5					6129.4		
BARNACLE CYPRIDS		700.1		678.0			
CALANUS MARSHALLAE/PACIFICUS S6F	1296.5						
CLAUSOCALANUS SP. S6F		700.1		678.0		2771.4	
CLAUSOCALANUS SP. S5	2598.1		1276.9				
CRYPTONISCID				5721.7			
CYPHANAUTES LARVA		700.1					
EPILABIDOCERA AMPHITRITE <=S4				11448.8			
EVADNE SP.		1405.6	1276.9	678.0			
FISH LARVAE				42.5	362.2	91.3	
MICROCALANUS SP. S5	1296.5						
MICROCALANUS SP. S6F	2598.1	1405.6		5721.7			
MYSID							11.2
NATANTIA					38.5		
NEMATOSCELIS SP.					11.0		
PODON SP.		1405.6					
SAGITTA SCRIPPSAE		10.8		5.4			
SALP	5.1						
SARSIA SP.				10.8	11.0		
TORTANUS DISCAUDATUS S6*					3061.9		
UNIDENTIFIED MEDUSAE			5.4				5.6
LIMACINA SP.	2598.1	1405.6	678.0			1385.7	
OCTOPOD JUVENILE					5.5		

ZOOPLANKTON HAUL RESULTS - CRUISE 83-04 STANDARD LIST - STATION 70- 136 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	70	72	77	78	84	136
AMPHIPODS*						
UNIDENTIFIED JUVENILES		88.2			178.9	356.0
PARATHEMISTO SP.				5.5	184.4	10.8
CYPHOCARIS SP.						5.4
CHAETOGNATHS*						
UNIDENTIFIED JUVENILES	22.3	449.5	622.0	263.0	32.9	5801.9
SAGITTA ELEGANS		102.8	66.0		5.5	
EUKROHNIA HAMATA		288.3	82.6	38.4		10.8
CTENOPHORES*						
PLEUROBRACHIA SP.	50.2			5.5	5.5	5.4
EGGS LARVA*						
UNIDENTIFIED EGGS.			7887.4			1424.9
COPEPOD NAUPLII	2110.4		715.5	5434.9	2321.5	
BARNACLE NAUPLII				2717.4	8040.1	1070.0
EUPHAUSID LARVA	2813.9		715.5	2717.4	178.9	8904.5
DECAPOD LARVA	5.6	5.4		32.9	565.3	436.1
EUPHAUSIDS*						
JUVENILES		43.3	198.1		16.5	
EUPHAUSIA PACIFICA		37.9	27.5			
THYSANOESSA SPINIFERA		5.4	82.6			
LARVACEANS*						
LARVACEANS	9848.6			36674.6	26628.3	370.0
MEDUSAE*						
PHIALIDIUM SP.	94.9	5.4	16.5	11.0	16.5	
PROBOSCIDACTYLA SP.	5.6			16.4		
OSTRACODS*						
CONCHOECIA SP.			715.5			
SIPHONOPHORES*						
NECTOPHORES BRACTS				82.2	9115.7	76263.3
COPEPODS*						
ACARTIA LONGIREMIS <=S3/4	3517.4	908.7	715.5		357.3	1424.9
ACARTIA LONGIREMIS <=S4/5	10552.1	1455.0	7887.4	9505.6	713.5	12824.4
ACARTIA LONGIREMIS S6M	5627.8	2915.4	7171.8	21734.1	1251.3	1424.9
ACARTIA LONGIREMIS S6F	2110.4	3277.8	14343.7	25804.8	1070.2	3559.6
CALANUS MARSHALLAE S3	44.7	3461.7	358.3	3670.7		
CALANUS MARSHALLAE S4	178.7	9470.9	5916.9	6344.4	713.5	

ZOOPLANKTON HAUL RESULTS - CRUISE 83-04 STANDARD LIST - STATION 70- 136 PAGE 2
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	70	72	77	78	84	136
CALANUS MARSHALLAE S5	44.7	2369.1	4480.3	4547.3		
CALANUS MARSHALLAE S6M		1092.6	715.5	528.1	536.2	
CALANUS MARSHALLAE S6F	89.3	6917.9	5916.9	931.4	559.8	
CALANUS PACIFICUS S6F			179.4	500.8		
CALANUS SP. S1/2	703.5	182.3	2152.1	6793.6	2145.8	2495.0
CALANUS TENUICORNIS <=S4		182.3				
CENTROPAGES ABDOMINALIS <=S4	703.5					
CENTROPAGES ABDOMINALIS S5				1358.7		
CENTROPAGES ABDOMINALIS S6M				1358.7		
CENTROPAGES ABDOMINALIS S6F				1358.7		
EUCALANUS BUNGI S3		43.8				
EUCALANUS BUNGI S6F	5.6	372.1	55.0			
EUCHAETA JAPONICA S5M			22.0			
EUCHAETA JAPONICA S5F		48.7				
METRIDIA SP. <=S3	703.5	5100.5	10760.5			
METRIDIA SP. S4		2369.1	715.5	1358.7	178.9	
METRIDIA PACIFICA S5M		730.2			713.5	
METRIDIA PACIFICA S6M	703.5	546.3		1358.7	357.3	
METRIDIA PACIFICA S6F		1638.9			178.9	
NEOCALANUS CRISTATUS S3		43.8				
NEOCALANUS CRISTATUS S4		54.6				
NEOCALANUS CRISTATUS S5		27.0	16.5			
NEOCALANUS PLUMCHRUS S5		887.0	313.7	5.5	16.5	
OITHONA HELGOLANDICA	130165.0	42432.3	118332.4	130388.1	90789.7	119672.6
OITHONA SPINIROSTRIS		1276.5				
PARACALANUS SP. <=S4	703.5					4274.8
PARACALANUS SP. S5	6331.3	546.3	2152.1	2717.4	6788.8	16384.0
PARACALANUS SP. S6M	2110.4		1436.6	1358.7	1432.4	3204.7
PARACALANUS SP. S6F	703.5			9505.6	4110.6	22438.6
PSEUDOCALANUS SP. <=S3	51364.8	7832.0	15780.2	31239.7	14120.9	6769.8
PSEUDOCALANUS SP. S4	57696.0	9287.0	28687.3	80137.3	10699.4	3919.9
PSEUDOCALANUS SP. S5M	30255.0	5825.3	21515.5	48897.6	5180.8	1779.8
PSEUDOCALANUS SP. S5F	41510.5	6739.4	30839.4	62479.4	3929.5	2134.7
PSEUDOCALANUS SP. S6M	7034.7	12932.5	29402.8	70626.2	2145.8	356.0
PSEUDOCALANUS SP. S6F	20406.3	18941.7	95385.8	222748.5	11793.9	6054.6
SCOLECITHRICELLA MINOR <=S4		182.3				

ZOOPLANKTON HAUL RESULTS - CRUISE 83-04 STANDARD LIST - STATION 70- 136 PAGE 3
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	70	72	77	78	84	136
SCOLECITHRICELLA MINOR S5	703.5			1358.7		
SCOLECITHRICELLA MINOR S6F		364.0				

ZOOPLANKTON HAUL RESULTS - CRUISE 83-04 VARIANTS LIST - STATION 70- 136 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	70	72	77	78	84	136
BARNACLE CYPRIDS						356.0
BIVALVE LARVA				2717.4	357.3	1424.9
CALANUS MARSHALLAE/PACIFICUS <=S5					2327.0	447.0
CLAUSOCALANUS SP. S6F		730.2	715.5			
CLAUSOCALANUS SP. S5			715.5		178.9	
CORYCAEUS SP.						3559.6
ECHINOPLUTEUS LARVAE				1358.7		1070.0
EVADNE SP.	3517.4				8577.9	12464.1
FISH LARVAE		43.8				356.0
MICROCALANUS SP. S5		364.0				
MICROCALANUS SP. S6F		364.0	1436.6			
MICROCALANUS SP. S6M		181.7				
PERACLIS SP.						356.0
PODON SP.					357.3	5699.7
POLYCHAETE LARVAE					894.6	
SAGITTA SCRIPPSAE		5.4	5.5			
SALP			5.5		175.6	
TORTANUS DISCAUDATUS S6M						356.0
TORTANUS DISCAUDATUS <=S4						7834.4
UNIDENTIFIED COPEPODITES					894.6	
LIMACINA SP.	4220.8	364.0	715.5	2717.4	3929.5	4629.7
OCTOPOD JUVENILE		5.4				
CTENOCALANUS VANUS 5		181.7			178.9	
CTENOCALANUS VANUS 6F		908.7			536.2	

ZOOPLANKTON HAUL RESULTS - CRUISE 83-04 STANDARD LIST - STATION P2- P11 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	P2	P5	P8	P11
AMPHIPODS*				
UNIDENTIFIED JUVENILES		346.5	445.7	460.7
PARATHEMISTO SP.		236.1	205.9	262.1
EUPRIMNO SP.		86.9		
CHAETOGNATHS*				
UNIDENTIFIED JUVENILES	527.2	5826.4	3511.0	2676.4
SAGITTA ELEGANS	67.0	15.7	116.8	250.4
EUKROHNIA HAMATA			912.5	
EGGS LARVA*				
COPEPOD NAUPLII	4367.7			
BARNACLE NAUPLII	5819.8			
EUPHAUSID LARVA	5093.7	706.7	178.1	
DECAPOD LARVA		5.2		751.2
EUPHAUSIDS*				
JUVENILES		228.2	211.4	192.5
EUPHAUSIA PACIFICA		26.2		
THYSANOESSA SPINIFERA	4049.3			
LARVACEANS*				
LARVACEANS	726.1	7051.3	178.1	4685.1
MEDUSAE*				
PHIALIDIUM SP.	16.8	10.5		11.1
AGLANTHA SP.		1136.0	422.9	473.5
PROBOSCIDACTYLA SP.	5.6			
OSTRACODS*				
CONCHOECIA SP.		5643.2	1424.4	4868.7
SIPHONOPHORES*				
NECTOPHORES BRACTS		1151.7		348.9
COPEPODS*				
ACARTIA LONGIREMIS <=S3/4	2178.2	706.7		
ACARTIA LONGIREMIS <=S4/5	20374.9	706.7		
ACARTIA LONGIREMIS S6M	64772.0	706.7		
ACARTIA LONGIREMIS S6F	127354.5	1408.2		
CALANUS MARSHALLAE S3	12136.7			
CALANUS MARSHALLAE S4	15655.4			
CALANUS MARSHALLAE S5	10025.5	86.9		
CALANUS MARSHALLAE S6M	703.7			

ZOOPLANKTON HAUL RESULTS - CRUISE 83-04 STANDARD LIST - STATION P2- P11 PAGE 2
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	P2	P5	P8	P11
CALANUS MARSHALLAE S6F	2284.4	86.9		
CALANUS PACIFICUS <=S5	175.9		89.0	
CALANUS PACIFICUS S6F			89.0	
CALANUS SP. S1/2	15281.2			
CALANUS TENUICORNIS <=S4		23274.1	267.1	3744.7
CALANUS TENUICORNIS S5		4936.5	89.0	1875.2
CALANUS TENUICORNIS S6M		1408.2	89.0	1496.8
CALANUS TENUICORNIS S6F		2114.9	712.2	1686.0
EUCALANUS BUNGI S3		691.0	445.1	734.5
EUCALANUS BUNGI S4	175.9	691.0	178.1	829.1
EUCALANUS BUNGI S5M	5.6			92.4
EUCALANUS BUNGI S5F	5.6	5.2		
EUCALANUS BUNGI S6F	27.9	10.5		44.5
EUCHAETA JAPONICA S1/2		1041.7	712.2	
EUCHAETA JAPONICA S3		86.9	267.1	92.4
EUCHAETA JAPONICA S4		86.9		184.2
EUCHAETA JAPONICA S5M				79.6
EUCHAETA JAPONICA S5F				22.3
EUCHAETA JAPONICA S6M				5.6
EUCHAETA JAPONICA S6F			5.6	27.8
METRIDIA SP. <=S3	726.1	9166.2	1246.4	751.2
METRIDIA SP. S4	1457.7	6349.9	534.2	1124.0
METRIDIA PACIFICA S5M		9872.9	1068.3	
METRIDIA PACIFICA S5F		2821.6	801.3	
METRIDIA PACIFICA S6M	2183.8			
METRIDIA PACIFICA S6F		4229.8	89.0	187.5
NEOCALANUS CRISTATUS S2			267.1	46.2
NEOCALANUS CRISTATUS S3		86.9	712.2	143.6
NEOCALANUS CRISTATUS S4	726.1	26.2	534.2	360.0
NEOCALANUS CRISTATUS S5		62.9	2759.9	349.4
NEOCALANUS PLUMCHRUS S1			89.0	
NEOCALANUS PLUMCHRUS S4		86.9		
NEOCALANUS PLUMCHRUS S5		5.2	13543.4	154.7
OITHONA HELGOLANDICA	47306.9	160092.0	1691.5	13866.1
OITHONA SPINIROSTRIS	1457.7	24682.3	6593.6	6181.9
PARACALANUS SP. S5	3641.6	9872.9		1686.0

ZOOPLANKTON HAUL RESULTS - CRUISE 83-04 STANDARD LIST - STATION P2- P11 PAGE 3
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.	P2	P5	P8	P11
PARACALANUS SP. S6M	1457.7	2114.9		187.5
PARACALANUS SP. S6F	5093.7	40905.1		6743.9
PSEUDOCALANUS SP. <=S3	53126.8	1408.2	89.0	562.0
PSEUDOCALANUS SP. S4	36387.8	11987.8	801.3	6181.9
PSEUDOCALANUS SP. S5M	36387.8	706.7	445.1	2999.1
PSEUDOCALANUS SP. S5F	25474.3	2114.9	356.1	1496.8
PSEUDOCALANUS SP. S6M	23290.4	706.7	178.1	372.8
PSEUDOCALANUS SP. S6F	84415.3	7758.0	2492.8	5809.1
SCOLECITHRICELLA MINOR <=S4		1408.2	1958.6	2058.8
SCOLECITHRICELLA MINOR S5	726.1	706.7	890.3	562.0
SCOLECITHRICELLA MINOR S6M			445.1	562.0
SCOLECITHRICELLA MINOR S6F	726.1	2114.9	1246.4	1313.2

ZOOPLANKTON HAUL RESULTS - CRUISE 83-04 VARIANTS LIST - STATION P2- P11 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.	P2	P5	P8	P11
AEGINA SP.				5.6
AETIDEUS ARMATUS <=S4			89.0	
BARNACLE CYPRIDS	726.1			
BIVALVE LARVA		706.7		
CALLIOPIUS SP.	175.9			
CANDACIA BIPINNATA S6M		10.5		
CANDACIA COLUMBIAE S6F				120.5
CANDACIA COLUMBIAE S6M				27.8
CLAUSOCALANUS SP. S6F	1457.7	11999.0	717.8	11990.9
CLAUSOCALANUS SP. S6M		1411.0		1124.0
CLAUSOCALANUS SP. S5		9874.0	267.1	10494.2
CLAUSOCALANUS SP. <=S4		4937.0	89.0	7495.0
CLIONE SP.		26.2		33.4
CORYCAEUS SP.		1408.2	89.0	
EPILABIDOCERA AMPHITRITE S6M	175.9	5.2		
FISH LARVAE		15.7	5.6	51.7
GAETANUS SP. <=S4			534.2	
GAIDIUS VARIABLIS S5			22.3	
HETERORHABDUS SP. S6F				92.4
HETERORHABDUS SP. S5				368.4
HETERORHABDUS TANNERI S6F		5.2	356.1	
HETERORHABDUS TANNERI S6M		5.2		
HETERORHABDUS TANNERI S5			178.1	
LUCICUTIA SP. <=S4			178.1	374.5
LUCICUTIA SP. S5			178.1	751.2
LUCICUTIA SP. S6M			89.0	
LUCICUTIA SP. S6F			267.1	562.0
NATANTIA			5.6	27.8
NEMATOSCELIS SP.		57.6		16.7
ONCAEA SP.			178.1	375.0
PERACLIS SP.		706.7	89.0	
PLEUROMAMMA SP.		10.5		92.4
POLYCHAETE LARVAE			5.6	
RACOVITZANUS ANTARCTICUS S6F			178.1	934.8
RACOVITZANUS ANTARCTICUS S5			534.2	
RACOVITZANUS ANTARCTICUS <=S4			89.0	372.8

ZOOPLANKTON HAUL RESULTS - CRUISE 83-04 VARIANTS LIST - STATION P11 PAGE 2
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	P2	P5	P8	P11
SAGITTA SCRIPPSAE		57.6	194.7	239.3
SALP	5.6	706.7		264.9
SARSIA SP.		20.9		
SCAPHOCALANUS SP. S6F		706.7		
SIPHONOPHORE PNEUMATOPHORE				5.6
TOMOPTERIS SEPTENTRIONALIS		4057.0	11.1	189.7
UNIDENTIFIED AMPHIPOD				22.3
UNIDENTIFIED COPEPODITES		6774.0	4184.3	2809.9
UNIDENTIFIED MEDUSAE		5.2		27.8
LIMACINA SP.		2821.6	534.2	562.0
PHRONIMA SPP.		5.2	5.6	16.7
CLAUSOCALANUS SP.(2) <=4		20453.0	356.1	5809.1
CLAUSOCALANUS SP.(2) 5		40200.0	2314.7	8429.8
CLAUSOCALANUS SP.(2) 6M		5642.0		751.2
CLAUSOCALANUS SP.(2) 6F		47958.0	5347.2	8246.2
EUCHAETA MEDIA		5.2		
EUCHIRELLA ROSTRATA 6F		20.9	89.0	11.1
EUCHIRELLA PSEUDOPULCHRA 5		5.2		
EUCHIRELLA PSEUDOPULCHRA 6M		5.2		
EUCHIRELLA PSEUDOPULCHRA 6F		5.2		11.1
CALANOID(1)		4512.0		

PHYTOPLANKTON DATA - CRUISE 83-04 : STANDARD LIST - STATION 3-9 TO 15-8 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	3-9	5-7	9-5	11-4	12-9	14-8	15-8
CENTRIC DIATOMS:							
BACTERIASTRUM DELICATULA				.09			
BIDDULPHIA LONGICRURIS				.18			
CHAETOCEROS COMPRESSUS		1.41		59.93	2.18		
CHAETOCEROS DEBILIS		.41	.27	49.94			
CHAETOCEROS DIDYMUS				1.82			
CHAETOCEROS ? GRACILE			1.36				
CHAETOCEROS ? RADICANS		1.50	5.99	341.86			
CHAETOCEROS SOCIALIS		.54		2.04			
CORETHRON HYSTRIX			.09				.03
DACTYLIOSOLENS MEDITERRANEUS					1.09		
LEPTOCYLINDRUS DANICUS		1.18	2.72	7.90			
RHIZOSOLENIA FRAGILISSIMA	.02						
RHIZOSOLENIA STOLTERFOTHII				.18			
SCHRODERELLA DELICATULA		.77	1.09	.82			
SKELETONEMA COSTATUM		.73	2.54	39.23			
THALASSIOSIRA AESTIVALIS				.45			
THALASSIOSIRA GRAVIDA/ROTULA				.27			
THALASSIOSIRA SPP.				.23			
RHIZOSOLENIA SETIGERA				.54			
PENNATE DIATOMS:							
ASTERIONELLA JAPONICA			.09				
NITZSCHIA? DELICATISSIMA			.59	4.13		.12	.08
NITZSCHIA? LONGISSIMA			.09	.77			
NITZSCHIA? PUNGENS				.09			
NITZSCHIA? SERIATA				.09			
THALASSIONEMA NITZSCHOIDES			.18	1.36			
UNID. PENNATES (5-20U)			6.58				
DINOFLAGELLATES:							
DINOPHYSIS				.05			
GONYAULAX				.18			
GYMNODINIUM	6.24	4.00	6.99	2.72	2.63	5.40	2.30
FLAGELLATES AND OTHERS:							
DISTEPHANUS SPECULUM				1.73		.04	.02
CRYPTOMONADS (5-10U)	5.95	136.02	320.89	95.79	.45	2.50	16.70
CRYPTOMONADS (11-20U)	.59	4.09	28.60	34.05	.45	.24	.26

PHYTOPLANKTON DATA - CRUISE 83-04 : STANDARD LIST - STATION 3-9 TO 15-8 PAGE 2
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	3-9	5-7	9-5	11-4	12-9	14-8	15-8
EUTREPTIELLA SPP.				.14			

PHYTOPLANKTON DATA - CRUISE 83-04 : VARIANTS LIST - STATION 3-9 TO 15-8 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.	3-9	5-7	9-5	11-4	12-9	14-8	15-8
PODOSIRA SPP.				1.54			
CHAETOCEROS CONSTRICTUM		.18		19.98			
CHAETOCEROS CONVOLUTUM		.04		.73			
CHAETOCEROS DIADEMA		.09		3.04			
CHAETOCEROS LACINIOSUM		.09		.86			
CHAETOCEROS LORENZIANUM				.54			
CHAETOCEROS SEPTENTRIONALE				1.36			
LEPTOCYLINDRICUS MINIMUS			21.57				
RHIZOSOLENIA ALATA F. GRACILLIMA				.14			
RHIZOSOLENIA FRAGILISSIMA V.		.36	5.72	.36			
THALASSIOSIRA ANGULATA				.14			
THALASSIOSIRA CONFERTA			3.54	2.27	.14	.48	.02
THALASSIOSIRA PACIFICA		.64	.64	4.36			
LEYANELLA APENARIA			47.03	61.02			2.20
THALASSIONEMA BACILLARIS		.09	.14		.32	.02	.03
THALASSIOTHRIX FRAUENFELDII				.18			
CYLINDROTHECA FUSIFORMIS		.36		.64			
NITZSCHIA GRANII							.02
NITZSCHIA PROLONGATOIDES	.20				1.54	.76	.06
NITZSCHIA LINEOLA					.45	.02	
KATODINIUM ROTUNDATUM	.66		3.50	17.80			.56
PROROCENTRUM BALTICUM			.73	.82			
SCRIPPSIELLA & GLENODINIUM SPP.			2.50	.23			
PHOTOSYNTHETIC CILIATES			1.09				
APEDINELLA SPINIFERA				3.63			
OCHROMONAS SPP.	40.88	49.94	77.18	104.24	4.99	4.10	4.60
CHRYSOCHROMULINA, IMANTONIA & PRYM	704.52	237.71	289.83	132.20	36.32	201.78	99.75
CORYMBELLUS AUREUS			28.83				
PYRAMIMONAS SPP.			24.15	8.62			
PTEROSPERMA SPP.			.23				
NEPHROSELMIS SPP.	.60	.91	8.63				
CHAETOCEROS C.F. MUELLERI			6.36	6.81			
HALOSPHAERA SPP.						.12	
CHAETOCEROS DANICUM				.82			
NITZSCHIA CYLINDRUS/PSEUDONANA					13.08	2.40	.31
CERATIUM FURCA				.09			

PHYTOPLANKTON DATA - CRUISE 83-04 : VARIANTS LIST - STATION 3-9 TO 15-8 PAGE 2
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.	3-9	5-7	9-5	11-4	12-9	14-8	15-8
GYMNODINIUM GRACILENTUM	1.94	1.36	8.81	5.68	7.72	1.09	5.65
CYLINDROTHECA CLOSTERIUM V. 1	.02				.18	.10	.04
NITZSCHIA AMERICANA				.68	.14		
OLISTHODISCUS CARTERAE							.80

PHYTOPLANKTON DATA - CRUISE 83-04 : STANDARD LIST - STATION 17-8 TO 27-7 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	17-8	20-2	20-4	22-7	23-7	25-8	27-7
CENTRIC DIATOMS:							
CERATAULINA BERGONII		.18					
CHAETOCEROS COMPRESSUS		9.99	4.90				
CHAETOCEROS DEBILIS		.73	1.00				
CHAETOCEROS ? GRACILE			.18				
CHAETOCEROS ? RADICANS		5.27	.27				
CHAETOCEROS SOCIALIS		.68	.23				
EUCAMPIA ZODIACUS		.05					
LEPTOCYLINDRUS DANICUS		2.81	1.95				
RHIZOSOLENIA FRAGILISSIMA		.09	.14				
RHIZOSOLENIA STOLTERFOTHII		.54					
SCHRODERELLA DELICATULA		.86	.86				
SKELETONEMA COSTATUM		49.94	1.95				
THALASSIOSIRA AESTIVALIS		.09					
THALASSIOSIRA GRAVIDA/ROTULA		.05					
THALLASIOSIRA NORDENSKIOLDII		.27	.73				
RHIZOSOLENIA SETIGERA		.36					
PENNATE DIATOMS:							
ASTERIONELLA JAPONICA		.36					
NITZSCHIA? DELICATISSIMA	.12	.91	.23	.03			
NITZSCHIA? LONGISSIMA	.01	1.18	.14				
THALASSIONEMA NITZSCHOIDES	.00						
DINOFLAGELLATES:							
GYMNODINIUM	1.45	.50	3.45	4.24	1.03	2.75	5.00
FLAGELLATES AND OTHERS:							
DISTEPHANUS SPECULUM				.01			
CRYPTOMONADS (5-10U)	12.32	4.00	19.34	9.88	1.44	3.65	23.30
CRYPTOMONADS (11-20U)	.66	.50	.59	.27	.24	.90	2.74
EUTREPTIELLA SPP.	.01						.03

PHYTOPLANKTON DATA - CRUISE 83-04 : VARIANTS LIST - STATION 17-8 TO 27-7 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.	17-8	20-2	20-4	22-7	23-7	25-8	27-7
PODOSIRA SPP.				.00			
CHAETOCEROS CONSTRICTUM		.73	.23				
CHAETOCEROS DIADEMA		.27					
CHAETOCEROS LORENZIANUM		.18					
CHAETOCEROS SEPTENTRIONALE		.32					
CHAETOCEROS SIMILE		.45					
CHAETOCEROS SUBTILE		.27					
LEPTOCYLINDRICUS MINIMUS		.64	.18				
RHIZOSOLENIA ALATA F. ALATA			.09				
RHIZOSOLENIA ALATA F. GRACILLIMA		1.00					
RHIZOSOLENIA FRAGILISSIMA V.	.01	.18	.27				
THALASSIOSIRA CONFERTA	.27	.23	.18			.20	
THALASSIOSIRA PACIFICA		1.36				.01	
LEYANELLA ARENARIA	80.26					1.40	
CYLINDROTHECA FUSIFORMIS		.05	.50				
NITZSCHIA PROLONGATOIDES				.19		.55	.02
NITZSCHIA BICAPITATA		.68					
NITZSCHIA LINEOLA		.23					
KATODINIUM ROTUNDATUM	.90		.23			.30	.25
PROROCENTRUM BALTICUM			.18		.01		
SCRIPPSIELLA & GLENODINIUM SPP.			.18		.24		
OCHROMONAS SPP.	8.16	55.39	10.35	4.68	3.22	61.56	2.04
CHRYSOCHROMULINA, IMANTONIA & PRYM	100.78	83.54	155.09	98.04	32.15	250.80	147.29
PYRAMIMONAS SPP.	6.52		1.45			.50	.46
PTEROSPERMA SPP.			.36	.12	.02		
NEPHROSELMIS SPP.	.18		.73			.20	.88
HALOSPHAERA SPP.	.01				.14		.12
NITZSCHIA CYLINDRUS/PSEUDONANA	.44		.14	1.36		.75	
CERATIUM FURCA	.01		.32				
GYMNODINIUM GRACILENTUM	.26	2.27	3.90	4.92	2.24	1.22	1.56
CYLINDROTHECA CLOSTERIUM V. 1			.36				
NITZSCHIA AMERICANA	1.09	2.27	.50	.11			
OLISTHODISCUS CARTERAE			.14			1.25	.38

PHYTOPLANKTON DATA - CRUISE 83-04 : STANDARD LIST - STATION 29-5 TO 47-9 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	29-5	30-3	34-9	38-8	40-9	43-3	47-9
CENTRIC DIATOMS:							
CHAETOCEROS AFFINIS		.56	.10				
CHAETOCEROS COMPRESSUS		.24	.12				
CHAETOCEROS ? GRACILE	.03	.60		.36	.04		
CHAETOCEROS ? RADICANS		2.22					
CHAETOCEROS SOCIALIS		.52					
DACTYLIOSOLENS MEDITERRANEUS							.05
DITYLUM BRIGHTWELLII		.01					
EUCAMPIA ZODIACUS		.04					
LEPTOCYLINDRUS DANICUS		.02					
RHIZOSOLENIA DELICATULA		.06					
RHIZOSOLENIA FRAGILISSIMA				.09			
SCHRODERELLA DELICATULA		.07					.01
SKELETONEMA COSTATUM	.12	2.80	92.82	6.45	.08		
STEPHANOPYXIS PALMERIANA	.02						
THALASSIOSIRA AESTIVALIS		.02					
THALASSIOSIRA GRAVIDA/ROTULA			.04				
THALLASIOSIRA NORDENSKIOLDII			.02				
THALASSIOSIRA SPP.					.00	.02	
PENNATE DIATOMS:							
ASTERIONELLA JAPONICA		.18	.22				
NITZSCHIA? DELICATISSIMA		.84	.65	.27	.05	.01	
NITZSCHIA? LONGISSIMA	.06	.08		.09			
NITZSCHIA? PUNGENS		.12	.18				
NITZSCHIA? SERIATA				.09			
THALASSIONEMA NITZSCHOIDES		.04	.12		.02	.01	
DINOFLAGELLATES:							
GYMNODINIUM	2.26	2.46	1.64	1.27	5.28	11.87	1.44
FLAGELLATES AND OTHERS:							
DISTEPHANUS SPECULUM	.02	.02		.36	.07	.02	.02
CRYPTOMONADS (5-10U)	66.64	12.50	2.84	37.68	23.18	57.57	42.41
CRYPTOMONADS (11-20U)	2.00	2.90	2.60	13.53	4.60	7.28	2.36
EUTREPTIELLA SPP.			.03				

PHYTOPLANKTON DATA - CRUISE 83-04 : VARIANTS LIST - STATION 29-5 TO 47-9 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.	29-5	30-3	34-9	38-8	40-9	43-3	47-9
PODOSIRA SPP.		.01			.03		
CHAETOCEROS CONSTRICTUM		.02					
CHAETOCEROS DIADEMA		.14					
CHAETOCEROS LACINIOSUM		.03					
CHAETOCEROS LORENZIANUM		.10	.04				
CHAETOCEROS SUBTILE		.05					
RHIZOSOLENIA FRAGILISSIMA V.		.32					.16
THALASSIOSIRA CONFERTA	.92	.70					
THALASSIOSIRA MENDIOLANA		.02					.03
THALASSIOSIRA PACIFICA	.02	.03					
LEYANELLA ARENARIA	3.08		1.68	119.49	.67	61.56	14.84
THALASSIONEMA BACILLARIS		.11		.09	.06	.04	.04
CYLINDROTHECA FUSIFORMIS	.01		.05	.05	.02		
NITZSCHIA GRANII				.05			.01
NITZSCHIA CF. SUBPACIFICA		.04	.02				
NITZSCHIA BICAPITATA							2.69
NITZSCHIA LINEOLA		.02	.54	.14	.04		.04
KATODINIUM ROTUNDATUM		.90	.20	.82	.80	12.77	1.54
PROROCENTRUM BALTICUM	.11		.04		.11	.58	.46
HETEROCAPSA TRIQUETRA			.02				
SCRIPPSIELLA & GLENODINIUM SPP.		.06					
APEDINELLA SPINIFERA	.24	.50					
OCHROMONAS SPP.	20.44	7.90	13.90	40.41	16.24	33.29	48.79
CHRYSOCHROMULINA, IMANTONIA & PRYM	109.44	119.70	42.56	354.53	97.58	152.76	163.02
PYRAMIMONAS SPP.		1.70	.22	.23	.50	5.00	10.53
PTEROSPERMA SPP.	.22				.16	.80	1.04
NEPHROSELMIS SPP.		.16			.14		2.91
HALOSPHAERA SPP.		.08			.10		
NITZSCHIA CYLINDRUS/PSEUDONANA	1.27	.34		7.45	.74	.96	21.60
CERATIUM FURCA				.05		.01	
GYMNODINIUM GRACILENTUM	1.08	1.60	.94	.27	1.84	1.92	2.40
CYLINDROTHECA CLOSTERIUM V. 1							.04
NITZSCHIA AMERICANA		.63	.37	.18	.04		.02
OLISTHODISCUS CARTERAE							.36

PHYTOPLANKTON DATA - CRUISE 83-04 : STANDARD LIST - STATION 50-2 TO 60-10 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	50-2	50-4	53-7	55-8	55-10	58-7	60-10
CENTRIC DIATOMS:							
BACTERIASTRUM DELICATULA		.09	1.27			.41	
CERATAULINA BERGONII		.36	.18			.02	
CHAETOCEROS AFFINIS			.27				
CHAETOCEROS COMPRESSUS		1.09	3.81			.80	.12
CHAETOCEROS DEBILIS		.50	.54			.21	
CHAETOCEROS ? GRACILE	.18	.68		.55	.18	.36	
CHAETOCEROS ? RADICANS		1.27	5.72			6.84	.20
CHAETOCEROS SOCIALIS		5.90	33.14			10.28	4.60
COSCINODISCUS SPP.	.02						
DITYLUM BRIGHTWELLII						.01	
LEPTOCYLINDRUS DANICUS			.14			.03	
RHIZOSOLENIA DELICATULA		.14	1.45			.21	.14
RHIZOSOLENIA FRAGILISSIMA	.01		.73			.02	.03
RHIZOSOLENIA STOLTERFOTHII		.09	.18			.01	
SCHRODERELLA DELICATULA			.09			.06	.03
SKELETONEMA COSTATUM	6.62	164.89	28.60	.26	.12	10.40	8.96
THALASSIOSIRA AESTIVALIS						.05	.02
THALASSIOSIRA GRAVIDA/ROTULA			.09			.09	
THALLASIOSIRA NORDENSKIOLDII		.14	.23			.12	
THALASSIOSIRA SPP.	.02		.14			.01	
PENNATE DIATOMS:							
ASTERIONELLA JAPONICA		.18		.06		1.08	.02
CYLINDROTHECA CLOSTERIUM			1.54				
NITZSCHIA? DELICATISSIMA	.26	1.45	2.54	.15	.03	4.48	.24
NITZSCHIA? LONGISSIMA	.04	.14	.36		.02	.38	
NITZSCHIA? PUNGENS		.32	.54			.24	
NITZSCHIA? SERIATA						.04	.01
THALASSIONEMA NITZSCHOIDES	.68	1.73	.73	.16		.40	.19
DINOFLAGELLATES:							
CERATIUM						.01	
GONYAULAX			.09			.01	
GYMNODINIUM	2.09	5.81	6.36	4.00	4.60	1.44	1.00
FLAGELLATES AND OTHERS:							
DISTEPHANUS SPECULUM	.04	.09	.09	.04		.14	.10
CRYPTOMONADS (5-10U)	30.32	59.02	43.58	124.26	36.68	23.71	9.40

PHYTOPLANKTON DATA - CRUISE 83-04 : STANDARD LIST - STATION 50-2 TO 60-10 PAGE 2
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	50-2	50-4	53-7	55-8	55-10	58-7	60-10
CRYPTOMONADS (11-20U)	1.89	13.35	8.17	10.90	7.25	6.08	3.94

PHYTOPLANKTON DATA - CRUISE 83-04 : VARIANTS LIST - STATION 50-2 TO 60-10 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.	50-2	50-4	53-7	55-8	55-10	58-7	60-10
CHAETOCEROS CONVOLUTUM						.05	
CHAETOCEROS DIADEMA			.36				
CHAETOCEROS LACINIOSUM						.05	
CHAETOCEROS LORENZIANUM	.03	.18	.09			.10	
CHAETOCEROS SEPTENTRIONALE		.68					
CHAETOCEROS SIMILE		.05					
RHIZOSOLENIA ALATA F. GRACILLIMA			.14			.06	
RHIZOSOLENIA FRAGILISSIMA V.		.09	.06			.14	.01
THALASSIOSIRA ANGULATA	.03						.01
THALASSIOSIRA CONFERTA	1.34	.27	.68	4.60	.04	1.32	1.76
THALASSIOSIRA PACIFICA	.02		.09	.02		.26	.02
LEYANELLA ARENARIA	121.98	85.17	19.98	368.22	18.76	97.58	26.04
THALASSIONEMA BACILLARIS	.36	.54	.18	.11		.27	.37
CYLINDROTHECA FUSIFORMIS	.02			.02		.05	.02
NITZSCHIA CF. SUBPACIFICA		1.00	1.14			.48	.11
NITZSCHIA BICAPITATA		.82	1.14	.25		.40	
NITZSCHIA LINEOLA	.57	4.09	1.36	.07		.34	.24
KATODINIUM ROTUNDATUM	.72	2.27	7.49	8.00	.54	1.04	1.30
PROROCENTRUM BALTICUM		.11	.05	.24	.06	.11	
HETEROCAPSA TRIQUETRA			.09				
SCRIPPSIELLA & GLENODINIUM SPP.					.08	.05	
PHOTOSYNTHETIC CILIATES			.09			.25	
APEDINELLA SPINIFERA		.14					
OCHROMONAS SPP.	22.12	23.16	10.44	159.60	23.52	5.60	8.50
CHRYSOCHROMULINA, IMANTONIA & PRYM	340.86	698.71	222.46	403.56	329.46	12.88	96.33
PYRAMIMONAS SPP.		1.63	7.94	1.20	9.20	1.58	.60
PTEROSPERMA SPP.				.70	.60		
NEPHROSELMIS SPP.			1.14	1.30	10.20		
HALOSPHAERA SPP.			.41				.45
THALASSIOSIRA TENERA	.07						.02
CHAETOCEROS CURVISETUM							.04
NITZSCHIA CYLINDRUS/PSEUDONANA	2.86	28.38	1.36	14.40	5.90	1.38	
GYMNODINIUM GRACILENTUM	1.68	1.36	1.59	3.90	3.30	1.34	
NITZSCHIA AMERICANA	.11	.54	2.18	.05	.04	2.00	.31
OLISTHODISCUS CARTERAE							.26

PHYTOPLANKTON DATA - CRUISE 83-04 : STANDARD LIST - STATION P62-2 TO 73-8 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.	P62-2	P62-4	64-9	66-6	68-7	70-3	73-8
CENTRIC DIATOMS:							
BACTERIASTRUM DELICATULA						.05	
CERATAULINA BERGONII	.02						
CHAETOCEROS AFFINIS	.01		.23	1.18			
CHAETOCEROS COMPRESSUS		.18	4.63	3.54			
CHAETOCEROS DEBILIS			1.73	4.90			
CHAETOCEROS ? GRACILE	.08						
CHAETOCEROS ? RADICANS	.08	.45	13.62	4.09			
CHAETOCEROS SOCIALIS		1.82	20.88	7.72			
COSCINODISCUS SPP.	.01			.05			
DACTYLIOSOLENS MEDITERRANEUS						.18	
LEPTOCYLINDRUS DANICUS			.45	.27			
RHIZOSOLENIA DELICATULA	.15	.14	.64	.09			
RHIZOSOLENIA FRAGILISSIMA	.06	.09	.27	.41			
RHIZOSOLENIA STOLTERFOTHII				.09			
SCHRODERELLA DELICATULA	.07		.18	.18			
SKELETONEMA COSTATUM	1.30	73.00	184.14	642.86			
THALASSIOSIRA AESTIVALIS	.02	.09	.50				
THALASSIOSIRA GRAVIDA/ROTULA			.18	.45			
THALLASIOSIRA NORDENSKIOLDII				.23			
THALASSIOSIRA SPP.			.14	.27			
PENNATE DIATOMS:							
ASTERIONELLA JAPONICA	.01	.54	1.63	.91			
NITZSCHIA? DELICATISSIMA	.44	1.09	2.09	2.36	.04		
NITZSCHIA? LONGISSIMA	.12		.23				
NITZSCHIA? PUNGENS	.14	.09	.54	.59			
NITZSCHIA? SERIATA	.11	.18	.09				
THALASSIONEMA NITZSCHOIDES	.31	.27	2.91	1.91			
DINOFLAGELLATES:							
GYMNODINIUM	.90	1.50	.95	1.00	2.62	4.27	2.78
FLAGELLATES AND OTHERS:							
DISTEPHANUS SPECULUM		.09					
CRYPTOMONADS (5-10U)	27.59	23.61	5.27	2.81	35.28	35.41	8.06
CRYPTOMONADS (11-20U)	1.19	2.68	1.27	.59	1.34	4.90	1.60

PHYTOPLANKTON DATA - CRUISE 83-04 : VARIANTS LIST - STATION P62-2 TO 73-8 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.	P62-2	P62-4	64-9	66-6	68-7	70-3	73-8
CHAETOCEROS CONSTRICTUM			1.09				
CHAETOCEROS CONVOLUTUM	.09		.32	.23			
CHAETOCEROS DIADEMA		.27	.64	.73			
CHAETOCEROS LACINIOSUM			1.27	.18			
CHAETOCEROS LORENZIANUM	.02		.36	.18			
CHAETOCEROS SIMILE				.18			
RHIZOSOLENIA ALATA F. GRACILLIMA						.18	
RHIZOSOLENIA FRAGILISSIMA V.						.09	
THALASSIOSIRA ANGULATA	.01			.14			
THALASSIOSIRA CONFERTA	.06	.09	.14	.23	.21	.14	.08
THALASSIOSIRA PACIFICA	.08		.45	.82			
LEYANELLA ARENARIA	16.53	128.39	36.96	24.15	24.36	30.51	1.57
THALASSIONEMA BACILLARIS	.03		.18	.09			
NITZSCHIA CF. SUBPACIFICA	.00		.23	1.50			
NITZSCHIA BICAPITATA				.32			
NITZSCHIA LINEOLA	.34	2.09	5.08	15.35			
KATODINIUM ROTUNDATUM	.16	1.14	.91	.73	.35	2.18	.48
OCHROMONAS SPP.	6.83	15.44	8.63	4.54	40.32	7.72	7.28
CHRYSOCHROMULINA, IMANTONIA & PRYM	119.13	184.32	119.49	58.11	196.08	152.54	60.19
PYRAMIMONAS SPP.	.28	2.04	1.82	.82		1.82	.52
PTEROSPERMA SPP.							.08
NEPHROSELMIS SPP.		1.36				.82	
HALOSPHAERA SPP.							.20
THALASSIOSIRA TENERA	.02						
CHAETOCEROS CURVISETUM		.91	.27	1.18			
NITZSCHIA CYLINDRUS/PSEUDONANA			.18		3.00	2.50	.42
GYMNODINIUM GRACILENTUM	1.00	.91	1.04	.86	6.75	2.72	1.26
NITZSCHIA AMERICANA	.08		.82	.54			

PHYTOPLANKTON DATA - CRUISE 83-04 : STANDARD LIST - STATION 73-10 TO 94-1 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	73-10	75-8	77-8	79-6	82-6	86-3	94-1
CENTRIC DIATOMS:							
BACTERIASTRUM DELICATULA				1.56			.01
BIDDULPHIA LONGICRURIS							.18
CERATAULINA BERGONII						.05	.04
CHAETOCEROS AFFINIS						.09	
CHAETOCEROS COMPRESSUS				.10			
CHAETOCEROS DEBILIS						.32	1.72
CHAETOCEROS ? GRACILE						.68	
CHAETOCEROS SOCIALIS						.68	1.31
COSCINODISCUS SPP.							.00
DACTYLIOSOLENS MEDITERRANEUS					.14		
DITYLUM BRIGHTWELLII						.14	.02
EUCAMPIA ZODIACUS						.23	
LEPTOCYLINDRUS DANICUS						1.27	.37
RHIZOSOLENIA FRAGILISSIMA							.00
RHIZOSOLENIA STOLTERFOTHII				.01		2.63	3.12
SCHRODEPELLA DELICATULA						.36	.25
STEPHANOPYXIS PALMERIANA						.36	.04
THALASSIOSIRA GRAVIDA/ROTULA						.09	
PENNATE DIATOMS:							
ASTERIONELLA JAPONICA				.00			
NITZSCHIA? DELICATISSIMA					.05	1.18	.14
NITZSCHIA? LONGISSIMA					.02	.09	.05
NITZSCHIA? PUNGENS				.02	.06	16.62	4.26
THALASSIONEMA NITZSCHOIDES				.08	.01	.54	.21
DINOFLAGELLATES:							
DINOPHYSIS				.01			
GONYAULAX				.02			
GYMNODINIUM	2.24	5.30	5.00	1.04	1.95	5.45	.66
FLAGELLATES AND OTHERS:							
DISTEPHANUS SPECULUM	.01			.26			
CRYPTOMONADS (5-10U)	9.74	21.30	53.48	37.39	14.10	.64	2.12
CRYPTOMONADS (11-20U)	4.08	2.10	1.30	1.82	2.30	1.14	1.12

PHYTOPLANKTON DATA - CRUISE 83-04 : VARIANTS LIST - STATION 73-10 TO 94-1 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.	73-10	75-8	77-8	79-6	82-6	86-3	94-1
CHAETOCEROS CONSTRICTUM						2.36	7.58
CHAETOCEROS CONVOLUTUM				.02		.18	.07
CHAETOCEROS DIADEMA							.26
CHAETOCEROS LORENZIANUM				.06		.27	.53
CHAETOCEROS SEPTENTRIONALE						14.53	4.88
RHIZOSOLENIA ALATA F. GRACILLIMA						4.36	4.08
THALASSIOSIRA CONFERTA	.02	1.30	.17	.02	.42	2.32	.78
THALASSIOSIRA LEPTOPUS							.01
THALASSIOSIRA PACIFICA						.18	.01
LEYANELLA ARENARIA	9.97	1.96	80.37	43.96	38.64		
NAVICULA SPP.							.18
THALASSIONEMA BACILLARIS				.26	.01	.45	.14
THALASSIOTHRIX FRAUENFELDII						.18	
THALASSIOTHRIX LONGISSIMA							.12
TROPIDONEIS LEPIDOPTERA							.14
CYLINDROTHECA FUSIFORMIS				.01			.01
NITZSCHIA GRANII	.01						
NITZSCHIA LINEOLA				.01			
KATODINIUM ROTUNDATUM	1.06	1.80	1.88	1.84			
PROROCENTRUM BALTICUM				.20	.01		
SCRIPPSIELLA & GLENODINIUM SPP.					.03		
PHOTOSYNTHETIC CILIATES				.02			
OCHROMONAS SPP.	1.84	10.30	14.80	28.50	5.60	12.71	5.00
CHRYSOCHROMULINA, IMANTONIA & PRYM	33.74	114.00	176.70	178.41	99.75	49.03	8.29
PYRAMIMONAS SPP.	.20	.80	1.92	2.00			
PTEROSPERMA SPP.		.30					3.00
NEPHROSELMIS SPP.		.25	1.00	1.52	2.30		
CERATIUM LONGIPES				.00			
NITZSCHIA CYLINDRUS/PSEUDONANA	.76	1.35	3.60	.54	3.65	3.63	1.58
CERATIUM FURCA				.04		.09	
GYMNODINIUM GRACILENTUM	1.04	6.85	.88	1.56	4.85	2.04	.26
CYLINDROTHECA CLOSTERIUM V. 1	.00						
NITZSCHIA AMERICANA							1.06
OLISTHODISCUS CARTERAE	.08	.12			.14		

PHYTOPLANKTON DATA - CRUISE 83-04 : STANDARD LIST - STATION 94-3 TO 96Y-7 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.	94-3	96A-3	96M-2	96Y-7
CENTRIC DIATOMS:				
BACTERIASTRUM DELICATULA	.18			.14
BIDDULPHIA LONGICRURIS	.18	.86	.27	.81
CERATAULINA BERGONII	.05	.14	.10	.11
CHAETOCEROS DEBILIS	1.59	2.18	1.27	8.71
CHAETOCEROS ? GRACILE		.36	.12	
CHAETOCEROS SOCIALIS	2.91	1.09	.54	1.12
COSCINODISCUS SPP.				.02
DACTYLIOSOLENS MEDITERRANEUS	.14			.02
DITYLUM BRIGHTWELLII			.08	
EUCAMPIA ZODIACUS	.05	.18	1.36	1.02
LEPTOCYLINDRUS DANICUS	.45	4.90	2.08	3.40
RHIZOSOLENIA STOLTERFOTHII	4.72	8.85	7.35	12.35
SCHRODERELLA DELICATULA	.50	1.09	.61	.48
STEPHANOPYXIS PALMERIANA	.73	.09	.09	1.48
THALASSIOSIRA SPP.	.14	.14		
PENNATE DIATOMS:				
NITZSCHIA? DELICATISSIMA	.27	3.09	1.08	
NITZSCHIA? LONGISSIMA	.05	.95	.61	.48
NITZSCHIA? PUNGENS	.50	106.24	61.97	43.36
THALASSIONEMA NITZSCHOIDES		.45	.13	.05
DINOFLAGELLATES:				
GONYAULAX				.06
GYMNODINIUM	.86	.32	.27	.75
FLAGELLATES AND OTHERS:				
DISTEPHANUS SPECULUM	.05	.09		
CRYPTOMONADS (5-10U)	4.77	5.22	2.50	.68
CRYPTOMONADS (11-20U)	.45	.50	1.15	.19

PHYTOPLANKTON DATA - CRUISE 87-04 : VARIANTS LIST - STATION 94-3 TO 96Y-7 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.	94-3	96A-3	96M-2	96Y-7
CHAETOCEROS BOREALE				.06
CHAETOCEROS BREVE				.13
CHAETOCEROS CONSTRICTUM	3.50	29.19	10.26	16.50
CHAETOCEROS CONVOLUTUM	.23	.45		.21
CHAETOCEROS DIADEMA	.91	2.36	1.72	3.12
CHAETOCEROS LORENZIANUM	.14	.36	.60	.95
CHAETOCEROS SEPTENTRIONALE	10.44	93.98	1.80	10.55
RHIZOSOLENIA ALATA F. ALATA			.03	
RHIZOSOLENIA ALATA F. GRACILLIMA	1.04	18.86	.81	.91
THALASSIOSIRA CONFERTA	.27	1.82	.72	.70
THALASSIOSIRA PACIFICA			.09	.05
LEYANELLA ARENARIA	1.27			
NAVICULA SPP.		.45	.27	
THALASSIONEMA BACILLARIS	.41		.40	.11
THALASSIOTHRIX FRAUENFELDII	.18			
THALASSIOTHRIX LONGISSIMA		.45	.58	.24
CYLINDROTHECA FUSIFORMIS			.05	
NITZSCHIA CF. SUBPACIFICA				.35
NITZSCHIA LINEOLA	.23			.57
PROROCENTRUM BALTICUM	.23			
SCRIPPSIELLA & GLENODINIUM SPP.	.27			.40
PHOTOSYNTHETIC CILIATES	.36			.10
APEDINELLA SPINIFERA				.09
OCHROMONAS SPP.	4.99	12.26	5.90	14.56
CHRYSOCHROMULINA, IMANTONIA & PRYM	25.42	61.74	39.20	37.24
CORYMBELLUS AUREUS				.80
PTEROSPERMA SPP.	.32			
CHAETOCEROS C.F. MUELLERI	22.47			.35
THALASSIOSIRA TENERA			.04	
NITZSCHIA CYLINDRUS/PSEUDONANA	1.36			.90
CERATIUM FURCA				.03
GYMNODINIUM GRACILENTUM	4.09	.45	.42	.80
NITZSCHIA AMERICANA	1.18	10.08	.50	6.90

PHYTOPLANKTON DATA - CRUISE 83-04 : STANDARD LIST - STATION 101-5 TO 136-6 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.	101-5	117-3	125-5	129-4	129-6	134-7	136-6
CENTRIC DIATOMS:							
BACTERIASTRUM DELICATULA	.00	.01	.04				
BIDDULPHIA LONGICRURIS		.02	.07		.12		
CERATAULINA BERGONII	.06	.02		.03			
CHAETOCEROS AFFINIS				.04			
CHAETOCEROS COMPRESSUS							.56
CHAETOCEROS DEBILIS		.08	.06	.62	.39		.26
CHAETOCEROS ? GRACILE					.07		
CHAETOCEROS SOCIALIS				.95		2.10	.42
COSCINODISCUS SPP.		.00					
DACTYLIOSOLENS MEDITERRANEUS	.10	.05	.18			.09	
DITYLUM BRIGHTWELLII	.03	.10	.05		.06		
EUCAMPIA ZODIACUS		.08		.14	.25		
HEMIAULUS MEMBRANACEUS	.09						
LEPTOCYLINDRUS DANICUS	.49	.35	.70	1.95	.76	.02	
RHIZOSOLENIA DELICATULA	.04				.08		
RHIZOSOLENIA STOLTERFOTHII	1.56	.60	.67	5.05	1.23		.09
SCHRODERELLA DELICATULA	.22	.06	.16	.62	.28		
SKELETONEMA COSTATUM							35.77
STEPHANOPYXIS PALMERIANA	.06			.27	.05		
THALASSIOSIRA GRAVIDA/ROTULA							.13
THALLASIOSIRA NORDENSKIOLDII			.01				.08
THALASSIOSIRA POLYCHORDA	.05				.06	.02	
THALASSIOSIRA SPP.	.01		.02	.04			.06
RHIZOSOLENIA SETIGERA						.09	
PENNATE DIATOMS:							
ASTERIONELLA JAPONICA							.73
NITZSCHIA? DELICATISSIMA				.11	.38		.16
NITZSCHIA? LONGISSIMA		.02	.09	.09		.01	.07
NITZSCHIA? PUNGENS	9.48	7.68	7.15	33.60	16.60	.04	.28
NITZSCHIA? SERIATA	.04				.07		
THALASSIONEMA NITZSCHOIDES	.10			.10	.04		.14
DINOFLAGELLATES:							
DINOPHYSIS		.00				.01	
GONYAULAX	.02	.09					
GYMNODINIUM	.97	1.29	.66	.22	.53	.48	

PHYTOPLANKTON DATA - CRUISE 83-04 : STANDARD LIST - STATION 101-5 TO 136-6 PAGE 2
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	101-5	117-3	125-5	129-4	129-6	134-7	136-6
FLAGELLATES AND OTHERS:							
DISTEPHANUS SPECULUM	.01	.01				.06	
CRYPTOMONADS (5-10U)	6.36	.50	1.70	2.50	1.30	5.72	
CRYPTOMONADS (11-20U)	.19	.20	.62	.11	.30	.81	

PHYTOPLANKTON DATA - CRUISE 83-C4 : VARIANTS LIST - STATION 101-5 TO 136-6 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.	101-5	117-3	125-5	129-4	129-6	134-7	136-6
PODOSIRA SPP.				.05			
CHAETOCEROS BOREALE		.01				.01	
CHAETOCEROS BREVE						.01	
CHAETOCEROS CONSTRICTUM		.37	.64	.81	2.73		
CHAETOCEROS CONVOLUTUM		.01	.02				
CHAETOCEROS DIADEMA		.06	.02	.45	1.56		.64
CHAETOCEROS LACINIOSUM			.10				.82
CHAETOCEROS LORENZIANUM	.04	.01					
CHAETOCEROS SEPTENTRIONALE	.44	.05	1.65	19.32	1.32	.16	
RHIZOSOLENIA ALATA F. GRACILLIMA		.43	.68	2.27	.78	.02	
RHIZOSOLENIA FRAGILISSIMA V.	.02						
THALASSIOSIRA CONFERTA	.12	.27	.32	.30	.99	.07	2.26
THALASSIOSIRA LEPTOPUS	.01						
THALASSIOSIRA PACIFICA	.05					.01	.87
LEYANELLA ARENARIA	1.34					1.34	
NAVICULA SPP.			.03	.11	.08	.01	.12
THALASSIONEMA BACILLARIS	.06	.06	.18	.05		.02	.07
THALASSIOTHRIX LONGISSIMA	.11	.01	.10	.04			
CYLINDROTHECA FUSIFORMIS		.00					
NITZSCHIA CF. SUBPACIFICA			.11			.03	
PLEUROSIGMA ACUTUM					.02		
NITZSCHIA LINEOLA						.03	
PROROCENTRUM BALTICUM	.14	.01	.12	.07	.24	.02	
HETEROCAPSA TRIQUETRA						.01	
SCRIPPSIELLA & GLENODINIUM SPP.	.20	.19	.08		.10	.06	
PHOTOSYNTHETIC CILIATES	.05	.01		.05	.06		
APEDINELLA SPINIFERA					.11		
OCHROMONAS SPP.	4.03	8.06	2.80	4.40	4.50	7.52	
CHRYSOCHROMULINA, IMANTONIA & PRYM	25.76	42.64	26.32	50.68	32.20	17.02	
CORYMBELLUS AUREUS	.13	.09	.76				
PYRAMIMONAS SPP.	.28					.23	
PTEROSPERMA SPP.		.05	.02		.60	.14	
NEPHROSELMIS SPP.	.48	.96			.50	.12	
CHAETOCEROS C.F. MUELLERI		1.24	2.50	1.10	.15		
HALOSPHAERA SPP.						.01	
THALASSIOSIRA TENERA						.02	

PHYTOPLANKTON DATA - CRUISE 83-04 : VARIANTS LIST - STATION 101-5 TO 136-6 PAGE 2
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.	101-5	117-3	125-5	129-4	129-6	134-7	136-6
NITZSCHIA CYLINDRUS/PSEUDONANA	1.08	.04		.12		.04	
CERATIUM FURCA	.01				.04	.02	
GYMNODINIUM GRACILENTUM	4.08	3.76	6.05	3.80	5.90	2.06	
NITZSCHIA AMERICANA			.02	.37	.56	.05	
OLISTHODISCUS CARTERAE			.02			.03	

PHYTOPLANKTON DATA - CRUISE 83-04 : STANDARD LIST - STATION P2 TO P11 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	P2	P005	P008	P11
CENTRIC DIATOMS:				
BACTERIASTRUM DELICATULA	.02			
CHAETOCEROS COMPRESSUS	.08			
CORETHRON HYSTRIX			.03	
LEPTOCYLINDRUS DANICUS	.72			
RHIZOSOLENIA DELICATULA	.04			
RHIZOSOLENIA FRAGILISSIMA	.02			
RHIZOSOLENIA STOLTERFOTHII	.07			
THALLASIOSIRA NORDENSKIOLDII	.02			
RHIZOSOLENIA SETIGERA	.02			
PENNATE DIATOMS:				
ASTERIONELLA JAPONICA	.02			
NITZSCHIA? LONGISSIMA	.08			
DINOFLAGELLATES:				
GYMNODINIUM	2.00	.64	.28	.35
FLAGELLATES AND OTHERS:				
CRYPTOMONADS (5-10U)	10.40		6.40	2.78
CRYPTOMONADS (11-20U)	.12		.45	.24

PHYTOPLANKTON DATA - CRUISE 83-04 : VARIANTS LIST - STATION P2 TO P11 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.	P2	P005	P008	P11
CHAETOCEROS BREVE	.01			
CHAETOCEROS CONVOLUTUM		.02		
CHAETOCEROS LORENZIANUM	.09			
RHIZOSOLENIA FRAGILISSIMA V.	.82			
THALASSIOSIRA PACIFICA	.04			
LEYANELLA ARENARIA	1.40			
THALASSIONEMA BACILLARIS	.03			
CYLINDROTHECA FUSIFORMIS	.12			
NITZSCHIA GRANII	.01			
NITZSCHIA PROLONGATOIDES			.61	
NITZSCHIA CF. SUBPACIFICA	.03			
PROROCENTRUM BALTICUM			.04	
PROROCENTRUM GRACILE	.05			
SCRIPPSIELLA & GLENODINIUM SPP.	.98		.06	
OCHROMONAS SPP.	35.00		3.10	2.00
CHRYSOCHROMULINA, IMANTONIA & PRYM	202.92		61.32	16.91
PYRAMIMONAS SPP.	2.02			.08
PTEROSPERMA SPP.	1.15			
NEPHROSELMIS SPP.	2.30			.12
HALOSPHAERA SPP.	.04		.10	
CERATIUM FURCA	.01			
GYMNODINIUM GRACILENTUM	6.70	.36	2.64	.78
CYLINDROTHECA CLOSTERIUM V. 1			.60	
NITZSCHIA AMERICANA	.18			

PHYTOPLANKTON DATA - CRUISE 87-04 : STANDARD LIST - STATION U11A TO U15 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D. :	U11A	U11B	U12	U13A	U13B	U14	U15
CENTRIC DIATOMS:							
CERATAULINA BERGONII							.03
CHAETOCEROS COMPRESSUS							.13
CHAETOCEROS DIDYMUS							.07
CHAETOCEROS ? GRACILE						.05	
LEPTOCYLINDRUS DANICUS							.74
RHIZOSOLENIA FRAGILISSIMA							.03
RHIZOSOLENIA STOLTERFOTHII							.03
SKELETONEMA COSTATUM							1.25
PENNATE DIATOMS:							
NITZSCHIA? DELICATISSIMA			.07	.12	.15	.16	.13
NITZSCHIA? LONGISSIMA							.12
NITZSCHIA? PUNGENS						.18	
DINOFLAGELLATES:							
GYMNODINIUM	.60	.44	.52	.65	.27	1.78	1.22
FLAGELLATES AND OTHERS:							
CRYPTOMONADS (5-10U)	.31	9.76	1.40	2.30	39.20	30.52	28.28
CRYPTOMONADS (11-20U)	1.60	.10	.10	.10	4.58	1.63	1.12

PHYTOPLANKTON DATA - CRUISE 83-04 : VARIANTS LIST - STATION U11A TO U15 PAGE 1
(VALUES ARE NUMBER OF ORGANISMS/SQ. METER)

STATION I.D.	U11A	U11B	U12	U13A	U13B	U14	U15
CHAETOCEROS CONVOLUTUM				.03			
CHAETOCEROS LORENZIANUM							.10
CHAETOCEROS SUBTILE							.07
LEPTOCYLINDRICUS MINIMUS							.54
RHIZOSOLENIA FRAGILISSIMA V.							.23
THALASSIOSIRA CONFERTA						.50	.58
LEYANELLA ARENARIA	40.88						
THALASSIOSIRA PSEUDONANA	12.50						5.10
THALASSIONEMA BACILLARIS	.02						.04
FRAGILLARIA OCEANICA	1.28	.63					.14
NITZSCHIA PROLONGATOIDES	.14	.06	.54	1.64	.10	.38	.12
NITZSCHIA LINEOLA				.04			.04
KATODINIUM ROTUNDATUM						.63	.34
PROROCENTRUM BALTICUM	.03					.05	
SCRIPPSIELLA & GLENODINIUM SPP.		.09		.20	.09	.09	.24
APEDINELLA SPINIFERA				.09	.10		
OCHROMONAS SPP.	9.10	6.92	4.10	15.90	70.11	10.00	37.24
CHRYSOCHROMULINA, IMANTONIA & PRYM	76.38	41.04	62.70	145.92		126.54	153.90
PYRAMIMONAS SPP.	.14	.10		.08	2.72		23.80
PTEROSPERMA SPP.		.12	.08	.15			.07
CYMBOMONAS SP.							.03
NEPHROSELMIS SPP.				.13	1.00		4.10
CHAETOCEROS C.F. MUELLERI					.75	.65	
CHAETOCEROS C.F. PERPUSILLUM							.21
HALOSPHAERA SPP.		.03	.36	.08			.06
NITZSCHIA CYLINDRUS/PSEUDONANA	3.30	2.46	.17	.10	.22	.98	.68
CERATIUM FURCA	.02			.03			
GYMNODINIUM GRACILENTUM	.11		6.40	6.30	4.05	5.10	4.50
CYLINDROTHECA CLOSTERIUM V. 1	.11	1.84	.16	1.18	2.02	1.08	.13
NITZSCHIA AMERICANA							.16
OLISTHODISCUS CARTERAE			.28	.24	138.51	.16	

APPENDIX 1

A method of estimating the accuracy of nutrient concentration measurements through statistical analysis of duplicate readings

Let y_t = true value;

y_r = measured value; and

e = expected fractional error.

Then $y_r = y_t(1+e)$

The implicit assumption is that the variance of measurements is proportional to their mean value. This assumption was tested by graphical analysis of the data.

Taking the logarithm gives: $\ln(y_r) = \ln(y_t) + \ln(1+e)$

If $e \ll 1$, then $\ln(1+e) \simeq e$.

Thus $\ln(y_r) = \ln(y_t) + e$.

If y_1 and y_2 are replicate measurements of the same nutrient concentration, we have:

$$\ln(y_1) - \ln(y_2) = e_1 - e_2$$

Letting $D = \ln(y_1) - \ln(y_2)$, and squaring and averaging gives:

$$\overline{D^2} = \overline{e_1^2} - \overline{2e_1e_2} + \overline{e_2^2}$$

But e_1 and e_2 are uncorrelated, and therefore $\overline{e_1e_2} \to 0$ for large N.

Thus $\overline{D^2} = \overline{e_1^2} + \overline{e_2^2}$, and for large N $\overline{e_1^2} \to \overline{e_2^2} \to \overline{e^2}$

Therefore $\overline{D^2} = \overline{2e^2}$, and

$$e = \sqrt{D^2/2}.$$

This is the expression used to calculate the expected fractional error shown in the text. The expected percentage error is simply given by:

$$100e.$$